『清淨亞洲』2001 台灣年會

廢棄物管理國際研討會

主辦單位:

- 看守台灣協會
- 中央研究院東南亞地區研究計畫
- 綠色公民行動聯盟
- 自然環境保護基金會

協辦單位:

- 全國教師會
- 美濃愛鄉協進會
- 福爾摩沙新世紀環保基金會

贊助單位:

- 行政院外交部
- 宜蘭縣政府
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議　程

- 活動日期：2001 年 7 月 26~30 日
- 舉辦地點：台北劍潭海外青年活動中心(318 階梯教室)；
  宜蘭社福大樓(宜蘭市公所旁)

日期	時間	地區	活動	時間
7/25	16:00	台北	全體外賓抵達	
7/26	8:30- 9:00	台北	報到	
	9:00- 9:10		開幕致詞：鄭先祐教授（看守台灣協會理事）蕭新煌教授（中研院東南亞研究計劃主持人）	10 分鐘
	9:10- 9:20		介紹台灣參與團體	10 分鐘
	9:20- 9:35		介紹國外參與團體	15 分鐘
	9:35- 9:45		GAIA(全球焚化爐替代方案聯盟）與 WNA（清淨亞洲聯盟)之簡介	10 分鐘
	9:45-10:15		專題演講:劉兆漢校長（國家永續發展計畫主持人）	30 分鐘
	10:15-10:30		茶敘	15 分鐘
	10:30-12:00		專題報告：替代方案的可行性—‘零廢棄物’計畫/by Warren Snow（紐西蘭零廢棄物信託基金）	90 分鐘
	12:00-12:15		案例介紹:零廢棄物觀光鄉鎮科瓦隆（紐西蘭）(Kovalum)	15 分鐘
	12:15-13:30		午餐	75 分鐘
	13:30-15:00		各國代表報告(每一位 15 分鐘 x6)	90 分鐘
	15:00-15:15		茶敘	15 分鐘
	15:15-16:30		各國代表報告（每一位 15 分鐘 x5）	75 分鐘
	16:30-17:30		專題報告：日本焚化爐實際成本調查報告/by Ayako Sekine （日本國際綠色和平）	60 分鐘
	17:30-19:00		晚餐	
	19:00		休息	
7/27	8:30- 8:45	台北	議程檢討	15 分鐘
	8:45- 9:45		國內外經驗分享	60 分鐘
	9:45-10:00		茶敘	15 分鐘
	10:00-10:30		國內外經驗分享	30 分鐘
	10:30-12:00		專題報告：巴塞爾公約與斯德哥爾摩公約有關廢棄物交易與焚化之規定/by Jim Puckett（巴塞爾公約行動網）	90 分鐘
	12:00-13:15		午餐	75 分鐘

	13:15-14:45		專題報告：生產者延伸責任—『電子產品回收』(ETIB)運動 /by Leslie Byster（美國矽谷毒物聯盟）『電子產品回收』綱領連署活動	90 分鐘
	15:00-18:30		專車前往宜蘭	
	18:30-		新賞童玩節晚會節目	
	21:30~		住濱海渡假中心	
7/28	9:00-12:00	宜蘭	專題報告：NGO 推展廚餘堆肥化處理與有機農耕	
	12;00-13;30		有機竹筍午餐	
	13;30-17;00		參觀廚餘堆肥化及有機農耕推行成果	
	17;00-18;00		晚餐	
	18:00~		專車回台北	
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	8:45- 9:00		GAIA/WNA 成果報告	15 分鐘
	9:00-10:00		『清淨亞洲』策略與計畫分組討論	60 分鐘
	10:00-10:15		茶敘	15 分鐘
	10:15-11:15		『清淨亞洲』策略與計畫分組討論	60 分鐘
	11:15-12:15		『清淨亞洲』策略與計畫分組報告	60 分鐘
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	14:00-17:30		台灣歷史之旅	
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	10:30-11:30		記者會	60 分鐘
	12:00-13:30		午餐	
	13:30-17:00		參觀北投焚化爐及垃圾回收分類	
	17:30~		晚餐&夜遊小北街	
7/31	9:00-12:00	台北	檢討會/珍重再見	

首屆亞洲反焚化爐聯盟會議報告
（清淨亞洲之發起會議）

在已發展國家，選擇焚化爐作為處理廢棄物的方式，已漸漸落伍。西方國家的廢棄物處理公司發現亞洲是一個有利可圖市場，可以傾銷他們骯髒、名聲敗壞的技術商品。反對的社區以及運動人士發現要停止這些既存的、被支持的廢棄物焚化爐愈來愈困難，因為這些焚化爐受到政府以及多方面制度的保護。逐漸地，反對人士體認到需要將各地反對焚化爐的組織連結起來、以聯盟的方式創造一個共同的基礎去反對廢棄物焚化爐，並且設想一個不需要焚燒、安全而且顧及生態考量的替代性廢棄物處理方式之必要。

就是在這樣的背景下，有來自大陸香港、日本、南韓、台灣、馬來西亞、菲律賓、泰國、印度、尼伯爾、巴基斯坦、關島、以及美國等 36 個團體聚集在一起，共同參加在西元 2000 年 7 月 26-28 日，在泰國曼谷 Chulalongkorn 大學舉辦的「亞洲優先反對焚化爐聯盟會議」。

這個會議討論了：廢棄物焚化爐所帶來的陷阱，並且解釋那些可以取代焚化的替代方案，承諾要分享在各自國家內從事反對的經驗，擬出共同的宣言，並且設計許多有彈性的計畫可以突擊那些準備興建在某一個地方的廢棄物焚化爐。

在會議結束之後，成立了一個名為「清淨亞洲」的組織（Waste Not Asia，簡稱 WNA）。這是一個帶有草根性格的組織，反對廢棄物焚化爐、垃圾掩埋場以及其他種種「末端」(“end-of-pipe”)的處理方式，並致力於提昇永續的、非燃燒的廢棄物替代處理方案。這個組織想像一個零廢棄物的社會，將主要的重心放在減少廢棄物產生量以及物質再利用的目標上，企圖透過永續消費(sustainable consumption)、清潔生產(clean production)和生態友善的方式(ecology-friendly approaches)來達成。WNA 已經逐漸成為焚化爐替代方案全球聯盟(Global Alliance for Incinerator Alternatives)以及全球反焚化爐聯盟(Global Anti-Incinerator Alliance)的亞洲代表。

本篇來自 WNA 發起人的報告，主要分為兩個部分：第一個部分概要簡述幾個關鍵的事件以及在為期兩天半的會議裡達成的結論。第二個部分是呈現幾個後續的實際行動方案，這些方案都是在工作坊中討論出來的。

我們期望這份報告可以更進一步充實 WNA 的表現。

第　一　部　分

西元 2000 年 7 月 26 日

會議的第一天，是由 Chulalongkorn 大學的教務長發表歡迎致詞開始。接著是泰國的幾位代表繼續發表致詞：Tara Buakamsr（綠色和平組織東南亞分部代表）、Penchom Tan（替代性工業運動聯盟代表）。

結著由 Von Hernandez(綠色和平組織東南亞分部的代表)陳述舉辦這個會議的背景，並且注意到為了反對焚化爐的繼續擴張而有必要設計反對策略以及吸引反對資源的重要性。他描述了會議的舉辦過程，並邀請與會的各國團體簡要地介紹他們自己。

在各國與會團體都簡要地介紹他們完畢後，保羅・康奈特博士(Paul Connett)，是《不要廢棄物》(Waste Not)這本書的共同作者，詳細地討論為什麼焚化爐是一個錯誤的處理廢棄物的方式，並以環境的、經濟的、身體健康、以及倫理的理由來證明民眾反對以焚化爐處置廢棄物的正當性。這位反對焚化爐的老手同時指出盯住從焚化爐排放到空氣中的有毒物質，像是會污染環境以及會破壞人體內分泌系統的戴奧辛及弗喃等，的重要性。尼地・甲雅瑞曼(Nity Jayaraman)（綠色和平組織印度分部的代表），以及尼爾・坦克綠(Neil

Tangri)（「必要行動」(Essential Action)的代表）則談到了一些從外國移入的污染性工業、國際金融和被稱為毒物貿易的發展所扮演的角色。

在從各種角度檢討焚化爐完之後，康奈特博士又表示了他自己對燃燒廢棄物的替代方案的構想。他認為真正的解決方式要從資源分類開始做起，因為垃圾會變成垃圾就是因為各種物質都被混在一起，所以如果要避免成為垃圾就要從分類著手。任何一個成功的資源分類，都有幾個特點：簡單易行的設計、落實到在地的層級、有永續推行的決心、配合地方的社會與經濟狀況。接著並更進一步描述幾個支持資源分類的活動例子，包括發展出調查廢棄物量的方式、成立再利用以及修復的中心、進行廚餘堆肥的工作、提供物質再生(recovery)的服務。他的結論是：我們處理廢棄物的方式反映了我們如何關心我們所生存的土地。康奈特博士說：如果我們關心這個星球，我們就必須在意我們處理廢棄物的方式。

尼爾・坦克綠接著討論到包含醫療廢棄物焚化爐在內的議題，他引用一份由美國環境保護機構(US Environmental Protection Agency)所做的研究報告，這份報告認為處理醫療以及都市廢棄物的焚化爐是產生那些會對環境以及食物鏈造成戴奥辛以及汞污染的最主要來源。他強調那些標榜關懷人體健康的公司，有必要去發展一些實在的因應方式，像是垃圾減量、垃圾分類、再利用、發展替代性(alternative)廢棄物處理技術應用的可能。他所提出來的意見主要是根據在一些國家中實際執行的成功經驗而來。

Von Hernandez（綠色和平組織東南亞分部代表），將討論的方向轉成最近國際間才開始注意的、會被排放至環境中、性質很頑固的持久性有機物質(POPs)所造成的問題，以及這問題與地域性或國際性反對焚化爐運動可以發生的關連。會議中的與會者紛紛討論正在進行中的 POPs 貿易協商，以及如何利用這個正在進行的過程，使之變成反焚化爐的有力推手。接著，這些各個組織的代表試圖針對「地域性宣言」（Regional Platform）勾勒一份大綱，這是被設定在會議第二天（2000/07/27）要進行的討論題目。

該天，會議中的與會者決議要成立一個反對焚化爐的國際性網絡。並且連帶地討論了這個具有聯盟性質的網絡之目的以及運作方式。

西元 2000 年 7 月 27 日

這一天的早晨，會議由康奈特教授的發言開始進行。他澄清了那些被稱為防治污染新技術的種種正反理由。這些新技術有：熱解(pyrolysis)、電漿弧廢棄物處理設施(plasma arc waste treatment)、熱固化(thermoselect)，以即宣稱能將廢棄物變成能源的焚化爐(waste to energy incinerators)。

接著，這些與會者依序報告他們國家的狀況。他們概要陳述在他們國家內的廢棄物處理狀況、並交代他們國內正在運轉中或被提議要新增建的焚化爐計畫，以及他們團體的反對計畫和目標。在這些與會國家代表均陳述完畢後，分散成以地域性為劃分依據的小組討論，去討論在這地域裡發生的共同問題、需求、評估運動成功的機會、以及互相給予建議。主要的發現及建議如下表所列：

南亞：

問題：

此地區內的民眾對於廢棄物處理的議題不大關心，也沒有替代性的、有反應的機制可被創造，缺乏獲得資訊的管道，反對焚化爐的成功例子被封鎖，各團體間缺乏交流，要注意世界銀行的政策及計畫。

建議：

發現並且公布正面、積極的反對模式，提供研究戴奧辛的技術支援、支持零廢棄物 Kovalam initiave，設立/選定一個流動性的(roving)、反焚化爐的運動人士/地域性的組織/秘書以協助各地反對組織在運動上的推行。

東南亞：

問題：

在某些國家缺乏透明的、民主的決策體系，在印度以及馬來西亞露天燃燒的問題特別嚴重，受制於世界銀行及其他金融制度，非正府組織的財政困難。

建議：

進行國家層級的技術分享或訓練方案，建立抗爭成功的案例之檔案資料，連結社會其他行動者建立聯盟式的動員體系（可與窮人、婦女、科學家、人權擁護者、教堂工作者連結）。

東北亞：

問題：

缺乏普遍大眾的參與、缺乏可實際執行的、堪為表率的反對計畫，過度消費的行為模式，要注意 TNCs 和 JICA 這兩個組織的政策及動向。.

建議：

記錄成功抗爭的案例，翻譯《我們被偷走的未來》（Our Stolen Future ）一書，設法得到科學家或學者的支持，定義或指出「壞人」("bad guys")的意思，要求 JICA 結束他們支持焚化爐的活動，設法產生一份有實質、堅強證據可以反對 JICA 的研究報告。

今天會議的結束高潮是呈現以及正式採納這份大家共同討論出來的地域性宣言（參看附件一：清淨亞洲宣言），以及規劃接下來持續的行動計畫（參看本報告第二部份）。

西元 2000 年 7 月 28 日

在 28 日的早上舉辦了一場記者會，發佈會議三天來的綜合結論以及新聞稿。

第　二　部　分

在經過所有與會會員完整的過目、考慮之後，同意採取如下的活動，去追求這個才剛剛成立的聯盟所要進行的任務：

1. 藉著傳播 WNA 宣言，來連結其他組織及社區的支持。每一個參與的國家或團體可以再包含五個組織做為會員。藉著連結各地更小的區域來提昇這個具有亞洲地域性的聯盟的成就表現。
2. 設立一個資訊站/秘書來協助資訊或是社區經驗交流。George, Jayan, Neil and Nity 四人要在 2000 年 8 月底之前發展出一個計畫，內容包含郵件系統的建立、網站設置、網站連結，好用來方便 WNA 指導委員會的運作。
3. 幾個特定、具體的計畫/活動：
   a. 寫一份報告，指出 JICA 所執行的技術方案之糟糕的地方。（由日本的 Dr. Koa Tasaka 負責，他是日本反持久性有機物質組織（POPs Elimination Network）的代表）
   b. 編輯各地反焚化爐的成功案例或抗爭過程。以及可成功執行的替代性廢棄物管理方案。（由 Howard Liu 負責，他是綠色和平組織中國分部的代表）
   c. 發展一套物質可重複利用的方式，好用來反對廢棄物焚化爐。（由 Von Hernandez 負責，他是綠色和平組織東南亞分部的代表）

d. 2000年12月的時候，要在南非舉辦的IPEN會議上發表清淨亞洲的宣言。（由Von Hernandez和Jayakumar負責，前者是綠色和平組織東南亞分部的代表，後者是 Thanal Conservation Action and Information Network的代表）

4. 下屆WNA會議在台灣舉辦，日期訂在2001年7月。
5. 為了使WNA的工作順利推動，成立指導委員會，委員包括印度的Rajesh Rangarajan，日本的Koa Tasaka，馬來西亞的Mageswari Sangaralingam，尼伯爾的Toran Sharma，菲律賓的Von Hernandez，台灣的George Cheng，和美國的Neil Tangri。

附件一

『清淨亞洲』宣言

願景

『清淨亞洲』聯盟是由來自亞洲及太平洋地區的人民團體及個人所組成，共同致力於支持及推動以下宣言：

建立分散而以社區為基礎的回收體系，推廣再利用、再生及堆肥等資源再回收方而非摧毀資源；

反對廢棄物掩埋場、焚化爐等末端處理的方式；

要求產品製造者善盡責任，設計出在每一生命週期階段均能符合生態要求的產品及包裝；

消除持久性有機污染物或稱為POPs，追求一個無毒害的未來；

減少廢棄物的產生，提倡清潔生產；追求一個無廢棄物的社會；

鑒於以下這些原因：

亞洲在經歷快速的經濟及工業發展時，正重蹈北半球工業化國家，因拋棄式及過度消費文化而導致環境及社會自我毀滅的覆轍；

亞洲日漸增加的消費行為，導致日漸增加的垃圾山及其他被棄置於垃圾掩埋場，及在露天焚燒或用焚化爐焚化；

亞洲正處於危機之中，來自於跨國企業、國際金融組織、援助機構及政府正在推展摧毀及消滅資源的技術，例如垃圾掩埋場及焚化爐；

未做垃圾分類的傾倒及掩埋，正導致了嚴重的環境、社會及健康問題，不公平地摧毀了低收入者的社區；

許多國家在實質上、政治上都已沒有空間再容納新的掩埋場址；

垃圾焚化技術、不論是否回收能源，都會在空氣中及灰渣裡釋放出危險的物質，例如有毒的金屬、戴奧辛、夫喃及多氯聯苯等；

聯合國環保計劃已經確認戴奧辛、夫喃及多氯聯苯是持久性有機污染物，需要全世界優先採取因應行動；

工業化國家的垃圾焚化爐及掩埋場在經濟及環境上的不良紀錄，已導致大眾反對這些技術；

許多焚化爐及掩埋場的計劃都和貪污、醜聞及不民主的決策過程有關；

這些摧毀及消滅資源的行為，剝奪了後代子孫的資源，耗竭了當地社區的財源及資源，阻礙了地方經濟的發展及侵蝕了合理垃圾處理的發展，導致經濟利益集中在少數的企業手中；

亞洲地區已存在了龐大的非正式團體，提供了價值非凡的資源回收及再生服務；

焚化爐和掩埋場等末端處理的方法，危害了正在亞洲社區間及都市裡萌芽的先進而更優良的垃圾處理替代方案，同時也減損在製造階段進行減廢及降低毒性的進取心；

過度依賴這些末端處理的方法，將鼓勵輸出廢棄物及骯髒的技術這些唯利是圖的行為；

對垃圾掩埋場及焚化技術的大量投資，使許多國家及社區充滿憂慮，因為背負了過多的債務而削減了救濟貧窮的計劃；

貸款機構、國際經援組織經由資助這些計劃，在推廣這些不符潮流的垃圾毀滅行為上扮演重要的角色；

製造及使用非永續性的物質例如聚氯乙烯，已經毒害了人體健康及環境；

許多災害，例如菲律賓芭雅塔垃圾山的倒塌事件，又如日本仍在持續發生的戴奧辛煙氣毒害，都證明了這些方法是行不通而徒勞無功的；

在母乳及人體中都發現了戴奧辛、夫喃及其他化學物質，這些化學物質干擾威脅了我們的健康，特別是對最容易受傷害的族群，尤其是胎兒及嬰兒；

這些化學物質干擾侵犯了婦女的基本權利--撫育健康的小孩及用母乳哺育。

因此我們要求：

多國的、雙邊的私人資助及貸款組織，例如日本國際協力事業團(JICA)，美國國際開發署(USAID)，亞洲開發銀行及世界銀行等：

停止資助這些毀滅資源的計劃，包括焚化爐及相關垃圾處理技術；

停止向各國政府提供這些秘密、扭曲且偏頗的垃圾處理方案；

聯合國及其附屬機構：

譴責並停止提倡焚化爐及其他毀滅資源的技術；

各國政府：

停止新建焚化爐並逐漸停用現有的焚化爐；

提倡資源回收技術而非毀滅資源；

支持地方自發而有益於社區的提案而非圖利財團；

開放公眾參與垃圾處理議題的決策，並公開所有決策的過程；

確保垃圾處理解決方案符合民主程序及社會正義；

提供因避免處理而節省下來的成本，給將可回收及堆肥的資源移出掩埋場的社區及企業；

停止秘密的補貼垃圾焚化爐及掩埋場；

優先施行來源減廢，清潔生產，污染防治措施及永續性物質的使用；

停止使用非永續性物質例如聚氯乙烯及其他氯化合物；

支持各項要求停止使用持久性有機污染物質的國際條約；

以聯合國環境計劃署為前題進行協商；

為追蹤持久性有機污染物質的銷毀，應持續性的檢測在食物鏈及母乳中的戴奧辛、夫喃及其他化學物質濃度；

以上宣言係由以下團體確認並接受，西元 2000 年 7 月 29 日在泰國曼谷

日本反持久性有機污染物質組織（日本）
綠色和平組織—泰國、菲律賓、印尼、香港、日本
Von Hernandze—生態廢棄物聯盟(菲律賓)
Eero Brillantes—看守掩埋場組織(菲律賓)
Junilyn Silvestre—清淨空氣聯盟(菲律賓)
無廢棄物聯盟(美國)
基要行動組織(美國)
關島資源回收協會
DISHA(印度)
Thanal(印度)
毒性物質連線組織(印度)
看守台灣協會(台灣)
綠色陣線(台灣)

綠色公民行動聯盟(台灣)
美濃愛鄉協進會(台灣)
韓國無廢棄物聯盟(南韓)
檳城消費者聯盟(馬來西亞)
環境保育及保護協會(巴基斯坦)
尼泊爾環境文學作家論壇(尼泊爾)
替代性工業運動聯盟(泰國)
泰國永續性能源聯盟
社區權利學會(泰國)
Phuket 環保團體(泰國)
Klong Toe 環境保育組織(泰國)

附件二

參加會議名單

China	Clement Lam, Greenpeace China
	Howard Liu, Greenpeace China
Guam	Berrie Straatman, Recycling Association of Guam
India	Jayakumar, Thanal Conservation Action and Information Rajesh
	Rangarajan, Toxics Link
	Nityanand Jayaraman, Greenpeace India
	Shailendra Yashwant, Greenpeace India
	Sasanka Dev, DISHA
Japan	Ayako Sekine, Greenpeace Japan
	Kawana Hideyuki, Japan POPs Elimination Network
	Koa Tasaka, Japan POPs Eliminaton Network
Korea	Jung Youn-Koung, Green Korea United
	Lim Young Ja, Korean Network for Waste Free
	Kim Eun-Kyung, Seoul Metropolitan City Assembly
Malaysia	Mageswari Sangaralingam, Consumers' Association of Penang
Nepal	Toran Sharma, Nepal Forum of Environmental Journalists
	Pakistan Asma Hussain, Society for Conservation and Protection of Environment
Philippines	Eero Brillantes, Landfill Watch
	Junilyn Silvestre, Greenpeace Southeast Asia/Clean Air Coalition
	Von Hernandez, Greenpeace Southeast Asia/Ecological Waste Coalition
Taiwan	George Cheng, Taiwan Watch Institute
	Jian Zhi Chen, Green Citizens' Action Alliance
	Joyce Chia-Chieh Fu, Green Formosa Front
	Tung Han Chou, Green Formosa Front
	Yu Pei Hsiao, Green Formosa Front
	Kao Chieh Chang, Meinung People's Association
	Hua I Tseng, Dong Hua University
	Thailand Peter Burt, Campaign for Alternative Industry Network
	Penchom Tang, Campaign for Alternative Industry Network
	Chaipan Prasawat, Community Right Institute
	Tara Buakamsri, Greenpeace Southeast Asia
	Yanuar Sumarlan, Greenpeace Southeast Asia
	Suphakij Nuntavorakarn, Sustainable Energy Network for Thailand
	Wanrob Hirikul, Klongtoey University
USA	Paul Connett, Waste Not
	Neil Tangri, Essential Action/Multinationals Resource Center

『全球焚化爐替代方案聯盟』

羅爾宣言
(The Lowell Statement)

此宣言由「國際清潔生產研習營」的與會者於2000年6月在美國麻塞諸瑟州羅爾所草擬。

正當醫療廢棄物、都會垃圾和有害廢棄物等焚化爐，產生和排放包括戴奧辛、水銀及其它有毒污染物等有毒物質，來威脅人類健康和環境之際；

正當戴奧辛像內分泌干擾素一樣會對生育、發育、和免疫系統產生負作用，且已經被世界衛生組織(WHO)所屬的國際癌症研究所及美國環境保護署歸類為人類致癌物之際；

正當聯合國環境規劃署已確認，戴奧辛是十二種最急著採取全球行動清除的持久性有機污染物之一之際；

正當焚化方式在全球散播有毒物質，而污染控制設備僅僅把這種污染轉變為固態的灰燼和廢水，而繼續威脅環境和民眾的健康之際；

正當焚化分式吸走了當地社區的財源、廢棄物能源和物資，阻礙地方的經濟發展，以及忽視合理的廢棄物管理方法之際；

正當北半球各國民眾興起強烈的反對焚化爐，且在全球風起雲湧；而國際焚化爐的推手正在全球各地奔波，尋找新的市場，他們特別把目標鎖定在第三世界國家之際；

正當所有國家的焚化爐都極大比例建在低所得社區和有色人種社區時；

正當許多焚化爐的興建案已和貪污醜聞和反民主的決策程序有所關聯時；

正當確實、安全和經濟的焚化替代方案已有時；

我們，簽署本宣言的個人和團體，要求我們的政府停建新的焚化爐，以及鏟除既存的焚化爐；同時，要求建立以清潔生產和環境正義為基礎的生產和廢棄物管理的系統。這些包括減少使用有毒物質、減廢、重複使用和回收再製、保證公開資訊和民眾參與、以及永續、公平和正義的消費型態。

我們完全瞭解已有建立更永續性的生產方式和廢棄物管理的方法。我們認為這是政治領導人物的機會，來採納我們的建議，展現其對下一代福祉的承諾。

專題演講

專題講者簡介

華倫・史諾 (Warren Snow)

大約在 20 年以前，Wawwen Snow 離開他工作的私人公司，來到位處紐西蘭最北邊的一個小村莊 Kaitaia，協助當地社區發展、建立社區式的事業以及經濟中心（簡稱為 CBEC），Kaitaia 是一個經濟很難發展起來的地方。CEBC 設立並設法運作幾個環境企業（environmental businesses），將工作給予當地失業的人民，最後竟變成該社區最大的雇主。

自從 Warren 開始協助紐西蘭各地的社區去建立社區自行擁有的企業，而這些企業的焦點多半是放在資源回收、廢棄物減量、以及其他針對保護環境的事業，Warren 發現其實每一個社區都有自己的人力以及自然資源可以解決社區的問題，卻偏偏向外尋找那些反而會使他們消退力量的解決方案。他的熱情幫助社區回過頭來看見他們真正的、無窮潛能。

他在過去五年裡，都將時間花在管理紐西蘭最大的私人慈善基金（The Tindall Foundation）。他現在的公司 Envision NZ Ltd，就是將業務的重心放在如何加速社會轉形成永續社會上。特別是，他提供的管理方案以及服務方式被紐西蘭零廢棄物信託組織所接受採用（該信託組織的網站：www.zerowaste.co.nz）。這個信託組織提供一些經費給願意以減少廢棄物產生的方式來達成經濟成長的社區或是團體。紐西蘭有超過三分之一的地方政府已經設定希望在 2015 年前能達到廢棄物零成長的目標。同時，中央政府也在考慮要將這個目標定位中央的政策。

AYAKO SEKINE

Ayako Sekine 在 1991 年的時候參加綠色和平組織的日本分部（綠色和平組織的網站網址：www.greenpeace.org）。她在 1996 年的時候開始進行有關毒物爭議的運動。她的關注焦點是焚化爐。她非常深入地研究有關焚化爐的成本、花費狀況。也支持社區關閉焚化爐的抗爭行動。她同時還是「不要 PVC 玩具」（PVC-free toy）這個組織的一員。這組織希望以法律禁止的方式來要求小孩子的玩具不要由 PVC 材質製成。

吉姆・帕特 (Jim Puckett)

Jim Puckett 是亞太環境交換組織（Asia Pacific Environmental Exchange）的執行長，這個組織以西雅圖為主要的基地，他同時也是基要行動網絡（Basel Action Network，簡稱 BAN）的 coordinator。並且從事反有毒物質的運動已經 18

年了。在這之前，他花了八年的時間在綠色和平組織的阿姆斯特丹分部，負責擔任抗議毒物貿易運動的 Coordinator，同時也是 Toxics 這個組織的國際執行長。在他的指導下，綠色和平組織達成了一項國際性的禁令，使得有毒物質不可以再以海拋的方式進行處理，以及不准 OECD 國家將危險廢棄物（hazardous wastes）出口到 non-OECD 國家的國際禁令。

此外，他已經在非洲、美國中部、歐洲、太平洋及地中海幾個地方建立禁止廢棄物貿易的禁令。最近，BAN 的優先任務是去看看這些禁令是否有被認可、並確切執行，以及是否可以找到足夠的國家將這些地域性的禁令進一步推廣成國際性的法律。BAN 也在密切觀察在斯德哥爾摩會議上所達成的結論，使之不會變成一種藉口，一種為了要破壞持久性有機物質之生成，只好藉助於焚化技術、設備的藉口。BAN 同時也是國際反持久性有機物質網絡 International POPs Elimination Network (IPEN)、關懷健康不要傷害組織 Health Care Without Harm (HCWH)、全球反焚化爐聯盟 Global Anti-Incinerator Alliance (GAIA)的會員。更多有關 WAN 的資訊，可以在他們的網站www.ban.org得到。

萊斯利・拜司特 (Leslie Byster)

萊斯利・拜司特在 1992 年的時候以計畫執行長的身份加入矽谷毒物聯盟 Silicon Valley Toxics Coalition (SVTC)。從 1999 年開始，則擔任 SVTC 的溝通部長。她還是 SVTC 的 webweaver，要負責規劃 SVTC 的行動方案以及製作 SVTC 的出版刊物，還是國際推動負責任技術組織（International Campaign for Responsible Technology， 簡稱 ICRT）的一員，這個組織致力於推動永續的、不污染的技術之發展與應用。她定期地在美國或是巡迴國際與 SVTC 的國際伙伴跟 ICRT 的會員定期見面討論。

萊斯利同時也為「乾淨電腦運動組織」（Clean Computer Campaign）工作，這個組織的焦點是放在爭議性愈來愈大的美國電子廢棄物問題上，並致力於使製造電腦的整個生產過程能朝向「清潔生產」邁進，使產業發展能以「永續環境」為目標而努力，加重生產者及政府應負的環境責任。她還關心毒物貿易以及環境貿易的爭議，並針對高科技產業對環境以及人體健康所造成的效應進行研究，研究成果已發表成期刊論文。更多的資訊可以參觀 SVTC 的網站，網址為www.svtc.org。

零垃圾政策

永續社會新思維

過去 150 年，人們在自然資源使用不盡、可被浪費的前題之下，已經製造出一個龐大的產業體系。我們所製造的一切物品遲早都將埋進土裏，或是進入焚化爐裏面。人類產業系統所產生的廢棄物及物質正湧進我們的社區，其變成廢棄物速度是史前未有的。但是我們現在終於了解自然資源是有限的，而且大自然已經無法再吸收任何我們所製造的垃圾了。

同是污染製造者的現行人類產業體系已經想了兩個方法，來解決這些廢棄物的問題；第一個方法是掩埋，第二個方法是焚燒。掩埋只是在土地上挖一個大洞，一個較為好聽的名字是「有毒廢棄物掩埋場」。新的研究指出掩埋法在廢棄物入土後，必須花上將近 1,000 年的時間來維護，然而許多掩埋場維護設備的合約上卻註明只能使用短短的 30 年。這些廢棄物公司在 30 年後就掉頭離去，卻留給我們後代子孫來面對傷害土地的重金屬、毒物、毒氣以及土地的損失。第二個方法是燃燒廢棄物，造成有毒殘餘物不斷地排放到大氣中及滲進土壤裏，使得有用資源、工作及能源的流失。我們正成為我們「舊思維」下的犧牲品。

這兩個處理廢棄的方法，都是基於人定勝天的想法，人類可以想出辦法來解決自己製造的問題；但是這些方法總是製造更多的問題。我們需要的是一個新視界、新手段及新的解決辦法來處理垃圾問題。世界上有越來越多的社區起身反對廢棄物、抗爭掩埋場。在許多案例中，這些社區成功地制止他們。但即便一個被阻止，卻有更多其它的廢棄物、掩埋場或焚化爐在形成中，而興建這些的企業有更多的資源來運用產業體系，同時製造問題和解決問題。「全球焚化爐替代方案聯盟」(GAIA)是在全世界的反焚化爐運動中被視一個為很重要的紀錄；而且當許多人發現家裏後院快要變成掩埋場或焚化爐時，全球焚化爐替代方案聯盟也是指引他們希望的明燈。

我們必須起身反抗掩埋場及焚化爐的興建，但我們同時也必須提出第三個解決方案，一個每個人都會同意並且支持的解決方案。「零垃圾政策」是有目的，它是為新產業體系而設，為一個永續社會而成立。零垃圾政策提供所謂叛逆的人一個真實的、正面的解決方案，並與現行廢棄物處置科技、掩埋場、焚化爐相抗衡。全球的調查顯示，贊成參與垃圾回收有超過 90%的支持率，然而垃圾回收並沒有改變現有產業體系的原因，垃圾回收面對的是產業體系的最後產物，並無法從日常生活所需產品及服務的最初設計來做影響，使得這些東西最終還是需要由焚燒或是掩埋來解決。

零垃圾政策尋求產業體系的全面改革。好消息是，從社會、環境、尤其是經濟的角度來看，零垃圾政策可以抗衡現行的垃圾處理政策。身為一個新視野、一個新策略，零垃圾政策正以驚人的速度吸引大家的支持。來自大型企業、城市、政府、國際顧問、小型企業、社區團體、投資者、企業家和金融業的人視零垃圾

政策為創造永續社區的驅動力。零垃圾政策是一個實際的、經濟的，但更重要的是，它讓關心地球命運的人相信，他們可以有所改變。零垃圾政策是一個可行的、實際的、經濟的計劃，重要的是它讓關心地球命運的人燃起一線希望，相信他們可以有所改變。我們可以遠離經濟危機的桎梏，創造一個基於利用最少資源、產生最大價值的產業體系，創造一個資源循環的有效社會。

零垃圾政策的一個重要好處是，它有利於地方社區及地方經濟。當物資開始重複使用時，地方社區就有機會對抗全球化的勢力，這全球化勢力已經使得小的偏遠社區及部份族群被邊緣化。當越來越多處理資源回收的行業興起時，教育程度及收入較低的人，就能在當地找到訓練及工作機會。零垃圾政策是一個讓處於危機的社會重生的策略。焚化帶來的改變無法給我們急需的變局，我們需要的是一個全面的突破、一個全新看待事情的角度，能把我們社會導向一個新典範、新視界及一個新目標。零垃圾政策就是那個新視界及新目標。

在紐西蘭，我們必須於 2020 年之前為零垃圾政策定好一個全國性的目標。雖然紐西蘭政府還沒有採行零垃圾政策，但是我們的運動目標就是在鼓勵紐西蘭政府在 2020 年之前實行全國性的零垃圾政策。

自從 1997 年紐西蘭零垃圾政策信託設立之後，我們已經成立了由 50 個社區團體構成的網絡，來協助當地社區組織進行減少垃圾運動。許多團體已經獲當地議會的合約，答應在學校提供如何減少垃圾的相關課程，或是由議會掌控部份垃圾處理的過程。其中，一個社區團體把組織成員所經營的轉運站變成資源回收中心。有些社區團體已經獲得大到可以經營資源回收計劃或體系的合約，並把從資源回收中所獲得的經費，再用來重新設計原來必須使用掩埋場的處理垃圾方法。

我們已經說服 40%的紐西蘭城市在 2015 年之前採行零垃圾政策的目標。這並不表示這些市政府已經實行到一定的程度，而是他們現在有了新的視界及目標，所以當市議會在做決策時，他們必須把零垃圾政策在 2015 年前要達成的目標考慮進去，所有的計劃和垃圾處理政策都依據這個目標來設定。這使得垃圾處理系統合約設計的焦點擺在資源回收。上面提到的轉運站已經成為資源回收中心，而這個資源回收中心是由有回收概念的團體所設計。我們要讓掩埋場沒有垃圾可埋，紐西蘭不需要焚化爐，因為我們已成功地杜絕他們進入紐西蘭。

為了保持社區團體活躍並鼓勵他們，我們提供小額的種子經費來贊助推動計劃、參與會議、旅行，並幫助他們藉由不同的訓練來協助他們經營社區的回收計劃。我們同時也有一群人成立了像「零垃圾政策顧問」的小型公司，這些人非常重要，並專精於不同的領域，像是醫院廢棄物、回收中心設計、廢棄物稽核、管理、訓練、回收、社區型公司等等。我們試著去支援零垃圾政策顧問，因為如果他們經由我們的支持而成功，我們將會有更多的人來參與正確的的垃圾處理系統。零垃圾政策的成功與否仰賴於社區團體、城市、機構和企業能否獲得正確的指導。過去有太多的工程師及顧問，沒有注意到垃圾減量和回收的潛力，而傾向於要人們蓋更大更好的垃圾處理系統，甚至建議不要做資源回收，因為他們認為資源回收不經濟，然而這是完全不正確的。因此有我們自已的顧問可以確保他們

傳達正確的訊息，並且和他們的客戶一起合作以確保垃圾減量計劃的正確執行。

紐西蘭零垃圾政策信託同時也協助發明新產品、機械及更新製造過程的企業家們採用回收的資源。許多紐西蘭的小社區已，經承受太多經濟自由化及全球化的衝擊。回收及重複使用資源的進行可以扭轉這樣的衝擊，並在經濟上受重創的社區裏製造就業及生意機會。這些已經在紐西蘭境內發生，我們發現一個趨勢是，讓發明家和企業家想想如何運用回收的資源，因為目前許多企業正在從事出口貿易。這已經成為一個重要的產業，而且許多企業如果沒有透過紐西蘭零垃圾政策信託的小小的種子經費，他們就不能獲得支援幫助他們發明或給予技術上協助，他們便無法開始著手進行這些產業。直到現在，傳統的銀行體系仍然沒有查覺到回收的重要，及缺乏金援的管道已成為發展這個產業的障礙。

紐西蘭零垃圾政策信託在紐西蘭舉行會議及研討會，而且這些活動的贊助者協助大家，不斷的提出想法和支持來促使這個運動的壯大。我們常常驚訝地發現，有多少工作是伴隨小社區的回收及資源再利用產業而來的。許多成立社區型企業的非營利性社區團體，往往比私人企業更能深入廢棄物處理流程，因為這些社區團體的出發點與私人企業不同。這些社區團體要的是要為他們的社區創造就業機會和財富，他們要他們的子孫擁有未來，而且他們比私人企業更願意為更小的邊際效益工作，有時他們願意損失以維持一個能讓人們保有社區工作的服務。長遠來看，已經付出上述心力的社區團體，都達到更多的垃圾減量及促使更多人保有工作。

一個針對奧克蘭(Auckland) 65 家企業的調查顯示，四年前這些企業僱用了超過 1,700 人，每年貢獻 1 億 1,300 萬元給予當地經濟。這些企業全部都在成長的狀態，而且都面臨獲得財務支助上的困難。過去兩年，我們設立了一個名為「回收貸款」特別基金來解決他們面臨的問題。這個回收貸款是特別為資源回收相關產業而設，並為他們募款來資助他們得以繼續利用回收資源製造產品。

在紐西蘭，我們視乾淨的環境為我們最大的資產，尤其這密切關聯到我們的出口和觀光業。現行的廢棄物處理方式，對我們對全世界出口的潔淨食物來源和觀光業產生嚴重的威脅。廉價的廢棄物掩埋法和使用焚化爐的可能性會威脅我們產業的效率和競爭力。

人口少於 400 萬的紐西蘭已經被掩埋場所污染。多數掩埋場靠近海洋和水源地，一個城市可以在 100 年之內蓋上 50 座掩埋場。我們知道人口增加導致的消耗量增加，會使得廢棄物隨之爆增。我們不能讓舊思維來掌握我們的命運，舊思維會增加掩埋場，有毒廢棄物及重金屬會滲入我們的環境。舊思維只會設計焚化爐並吹噓焚化爐是安全的。我們必須站出來抵抗這些舊思維，但我們也必須提出新視界，這個新視界就是零垃圾政策。

危機需要行動和突破。零垃圾政策本身不是一項科技，反而比較像是科技的加總，以匹敵掩埋場和焚化爐。零垃圾政策已經改變企業、機構、社區、學校和個人對廢棄物的看法。我們正慢慢地教育人們，把想法拓展到管線之外，從整個供給鏈的角度來看看他們每次的採購，他們必須考慮到這些採購品的生命會在那

裏結束。

我們要每個人要負起責任，我們要設計家設計出耐久的產品、可一再維修、可拆解回收，並且採用對自然或產業系統無害的材質。我們要工廠投資新設計，來創造沒有浪費的產品，除去不必要的包裝，和為產品的生命週期負起責任。我們要零售商去要求他們的買主思考每一個他們所買的產品，並要求他們的供貨商不要浪費資源，並使用合理的勞力來生產對環境友善的商品。

零售商必須提供一套讓消費者可以將產品送回拆解的回收系統，並開使從買賣產品改為租賃和服務。我們要大學和學校將零垃圾政策列為基本課程之一，並實施回收系統。我們要他們教導人們在離開學校進入產業界工作之後，能負責協助設計新產業體系，好讓人類社會能真正成為自然的一部份。我們要人類深深的了解人類經濟是自然的附屬品，而非自然的主宰。

我們要顧問和工程師重新受訓以了解廢棄物，並接受已發明的零垃圾政策技術訓練。我們要社區組織和當地政府一起致力消除廢棄物以創造足夠的工作機會，並把回收的資源收回產業體系，或是無害地回到大自然。

我們要政府負起帶頭的角色，把零垃圾社會的視界傳到社區和產業，來讓國家更具競爭力。這些不走向零垃圾政策的國家將會逐漸變得沒有效率和沒有競爭力，而且他們的經濟終會衰退。

通往零垃圾政策的路是一個旅程，我們必須非常清楚我們在旅程中的方向。這境界和目標必須是零垃圾政策，我們需要一個期限來按步就班地達成這個境界，我們對紐西蘭的建議期限為 2020 年。許多已經為零垃圾政策設下目標的大公司，正循著他們的步調一步步接近這個目標。

下列為零垃圾政策的三個核心要素：

1. 第一個要素為「終結廉價的廢棄物處理」。唯一讓零垃圾政策可行的方法是，將處理廢棄物的費用定義為付給清潔人員的費用。如果我們真的要去計算處理的實際費用，將無人有辦法想出終結掩埋場和焚化爐的方法，因為這種產品的費用將會高的沒有人要買。
2. 第二個要素是「從體系中來設計廢棄物」。零垃圾政策是一個「管道終端」策略，但畢竟它是一個設計的方向。如果我們要達成零垃圾政策，我們必須從體系中來思考廢棄物處理的問題，而且我們必須設計出可讓供應鏈急速改變的策略，如此一來，策略才會包含供應鏈中的上上下下，每個人才會在這個資源有效循環的體系中扮演他們的角色。
3. 第三個要素是「讓人們參與其中」。如果我們沒有辦法讓每個人參與，並幫助他們相信向目標邁進是可能的話，沒有一個境界和目標會成功。在紐西蘭，這是目前我們正在努力進行的。

我們仍有漫長的路要走，而且許多批評者正等著看我們的失敗。我們的境界是強大的，我們的目標是堅定的，我們正逐步地建立零垃圾政策經濟和社會的基礎。如果我們在紐西蘭為零垃圾政策設的目標在 2020 年達成，我們將會再度成為領先者。

紐西蘭是世界上第一個賦予婦女投票權的國家，同時也是第一個禁止核子武器的國家，我們希望紐西蘭也會成為世界上第一個在 2020 年徹底消滅垃圾的國家。我的同事和我都相信，這完全是可行的，而且我們正全力研究新的技術來達成目標，這個過程和社會上的發明將會協助我們達成目標。我們同時也向民眾、其它的團體、協會、國家發難來加入我們的行列。只要我們都是朝向同樣的目標前進，誰是第一其實都不重要，我們可以重新改造我們的社會為永續的社會，這正是零垃圾政策的精神所在：一個為永續的未來需進行的改造。

.日本都市廢棄物焚化爐及戴奧辛對策的興建成本

國內支出及其趨勢的全面觀

前言

日本每年家戶產生的垃圾總量大約是 4 億噸，每天被送進總數達 1,800 座的都市固體廢棄物焚化爐(MSW)處理。這個日本焚化廠的數量，幾乎是佔目前既存世界所有大型焚化爐數量的三分之二[1]。根據一份 1996 年聯合國環境計畫署（UNEP）對 15 個國家所做的世界戴奧辛清冊之調查顯示，日本排放到空氣中的戴奧辛總量最高[2]。

雖然有許多其他設施也會排放戴奧辛，但是在日本，廢棄物焚化爐仍被認定是主要的戴奧辛污染來源。到目前為止，大量的日本納稅人繳交的稅款用於在日本各地興建或是改善焚化廠的設備。這些額外的成本花費在試圖以裝設先進的技術設備來改善舊型的焚化爐，以降低廢氣的戴奧辛濃度；或是以控制戴奧辛為藉口來興建新的大型焚化廠。這些技術對策被視為是唯一有效降低戴奧辛排放到空氣中的解決方案，且被認定是所有控制戴奧辛的策略和可行方法中最為優先的選擇。

究竟我們的社會已經投資了多少錢去焚化家戶垃圾？這些試圖防制從焚化廠排放戴奧辛的技術其確實的成本是多少？對於建立一個資源永續利用的社會，或是設置一套未來社會避免有害化學物質的解決方案來說，這些天文數字的龐大經費合理嗎？最後，當發展中國家試圖將廢棄物露天燃燒的方式，轉變成更精良的廢棄物管理體系時，如何來評估日本對焚化爐的投資？

綠色和平組織在 2001 年 3 月委託環境研究協會（Environment Research Institute Inc.）調查，日本政府到目前為止用稅款投資於推廣廢棄物焚化處理的詳細狀況。這份報告第一次顯示，大量的稅收用在興建廢棄物焚化廠，以及裝設各種技術對策以控制焚化爐的戴奧辛排放。

摘要

建造廢棄物焚化廠的經費，大部分來自國家的補助（符合特定條件的焚化廠），或是地方政府的舉債，其餘部份則由地方的一般預算支應。這份調查報告的資料來自於環境部（前身是厚生省）有關國家補助的報告、以及公共事務部（前身是內務省）有關各地方政府舉債的報告。從這個資料中清楚地看出，過去五年內，日本建造及改善廢棄物焚化廠的總經費，每年要花掉納稅人 6,000 億到 8,000 億日圓。兌美元匯率以 120 日圓算的話，大約是 50 億到 70 億美元。（以下設定美元兌換率為 120 日圓）。

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[1] M. Hiraoka et al.: Organohalogen Compounds, 19, 275-291(1994)

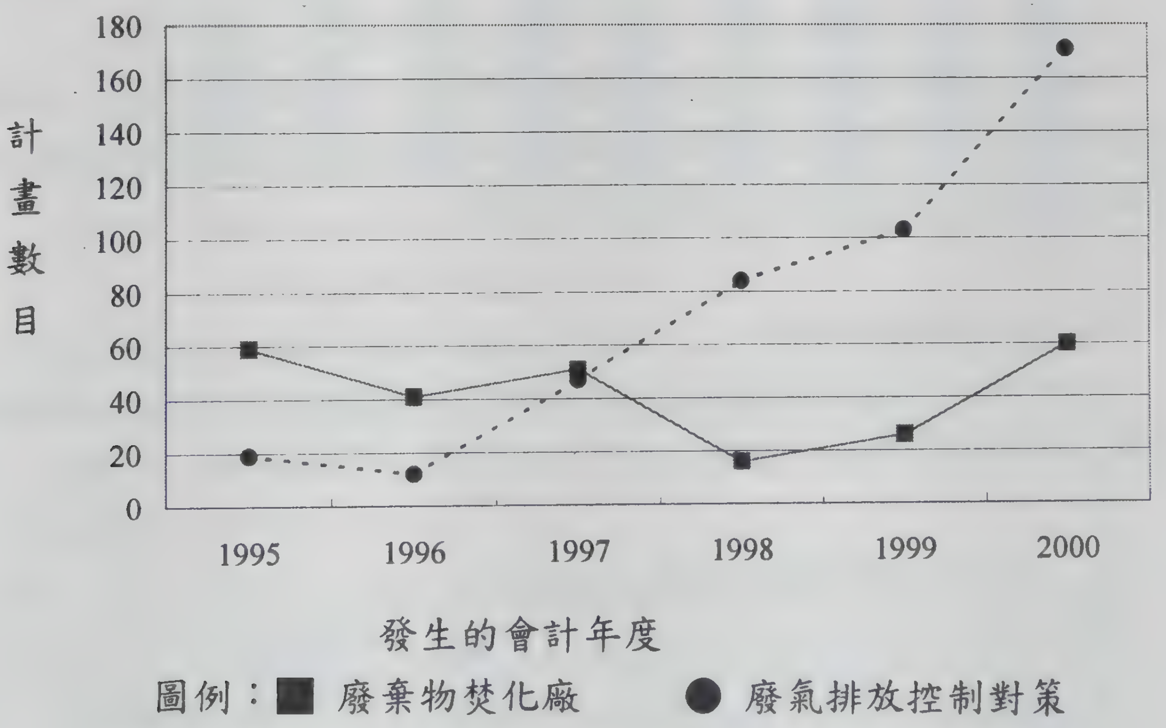
[2] UNEP,Dioxin and Furan Inventories-National and Regional Emissions of PCDD/PCDF, May 1999.

1、國家補助的趨勢

有關興建廢棄物焚化廠國家補助的資料，來自於最新採用的 1995 會計年度的計畫，以及非正式公佈的 2000 會計年度的計畫。關於國家補助那些控制排放氣體的先進技術(也就是像用來降低戴奧辛從煙道排放出去的袋式集塵器等更複雜的設備）的資料，也取自最新採用的 1995 會計年度的計畫，以及非正式公佈的 2000 會計年度的計畫。

1.1 國家補助興建廢棄物焚化廠，以及補助氣體排放控制設備的先進技術之數目及其趨勢

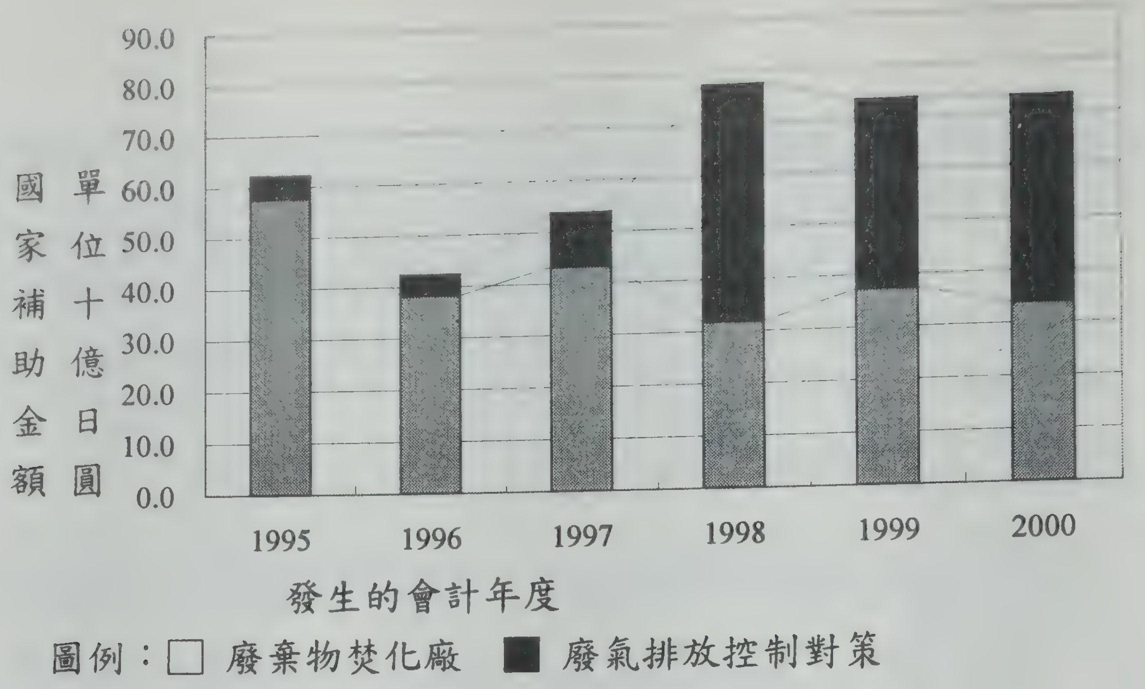
1997 年厚生省針對廢棄物焚化廠控制戴奧辛排放，公佈新的規範。在 1997 年之後，國家補助先進的排放控制設備（像袋式集塵器）的數目，增加到幾乎和興建新廢棄物焚化廠的數目一樣多。然而，由於國家的補助限於大型工廠（焚化量每日超過 100 公噸)，補助興建新廢棄物焚化廠的數目還是有減少。另一方面，每個計畫的補助金額則有上升，而補助給控制戴奧辛排放的設備改善之金額增加更大。在 2000 會計年度裡，因即將在 2002 年 12 月執行加強廢氣中戴奧辛排放的新管制，補助計畫的數目有 171 件，增加的數目是 1995 年到 1996 年該項數目的 10 倍（參閱圖一）。



圖一： 國家補助計畫的趨勢

1.2 國家補助金額的趨勢

國家對廢棄物焚化廠的補助金額在這幾年間已漸趨平穩，大約是每年 400 億日圓（3 億 3,000 萬美元）。然而，有關設備改善的部分，計畫的數目增加了。由於興建的平均時程拉長，補助的金額在 2000 會計年度增加到 400 億日圓，這個金額自 1997 年以來增加了 10 倍。



圖二：國家補助金額的趨勢

圖二所顯示的國家補助總金額，包括了 1999 會計年度所發生的總數，以及 2000 會計年度裡非正式公佈的部份。然而，從 1997 會計年度到 1998 會計年度，所有計畫的最終總成本並未確定；因此，也無法確定國家最終補助的總金額。這意味著在 1998 會計年度之後補助金額，看起來小於預計未來要補助的最終金額。當然，必須注意的是最後國家補助總金額在計畫完成的那年有可能很高。

因此，從每個計畫補助金額增加的因素、計畫數目的增加、以及興建時程的拉長來判斷，估計國家補助的金額很可能直到 2002 會計年度都會增加，2002. 年將開始執行廢氣排放新的嚴厲管制標準。

2. 地方政府舉債的趨勢

表一是 1991 會計年度到 1999 會計年度地方政府為了家戶廢棄物焚化及最終處置（人類廢棄物處理除外）的計畫所舉債（發行公債）的金額。

表一： 地方政府有關焚化廠舉債的趨勢

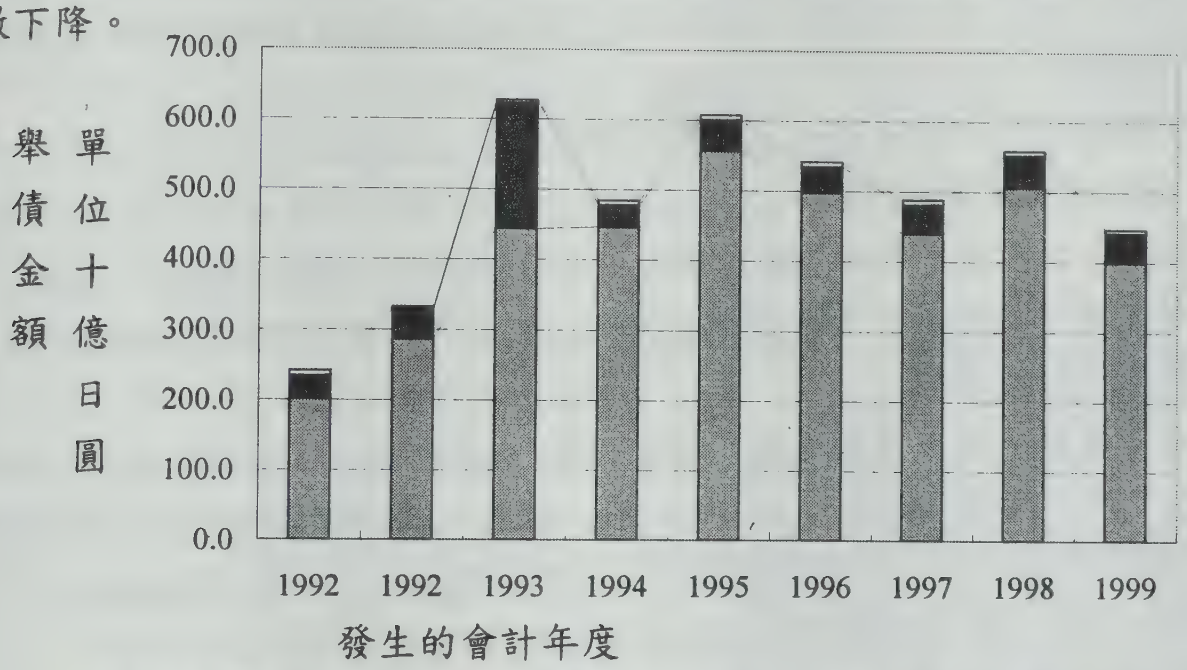
會計年度	舉債（百萬日圓）			
	廢棄物焚化廠	土地徵收	廢棄物運輸設施	合　計
1991	200,991	33,454	7,440	241,885
1992	286,966	42,070	3,694	332,730
1993	443,559	179,760	4,115	627,434
1994	446,654	31,143	6,326	484,122
1995	556,705	43,955	7,227	607,887
1996	497,327	37,180	6,987	541,495
1997	439,593	41,153	6,926	487,673
1998	505,467	46,490	6,537	558,493
1999	399,216	42,096	5,327	446,639

資料來源： 內政部

圖三顯示由中央政府（前內務省）所授權（核准）地方舉債的趨勢，其中，有 80%~90%是用於廢棄物焚化廠及其設施（1993 會計年度除外）。然而，土地徵收及準備廢棄物運輸設施的部份所佔比例相當小（參閱註一）。

註一：1993 會計年度，土地徵收所佔比例較高，約達 30%。同一年，東京都政府把廢棄物管理的職權轉到 23 個區政府，而在將來每個區都必須有廢棄物焚化廠的政策下，都已經取得了建廠的土地。因此，東京花了 182.2 億日圓中的 135.8 億日圓用來取得所需的土地。

如圖三所示，核准的借款金額在 1995 會計年度之前成長快速，之後趨緩或稍微下降。



圖例：廢棄物焚化廠 土地徵收 廢棄物運輸設施

圖三： 授權地方政府與焚化廠相關的舉債趨勢

3. 總支出金額的評估

藉著分析上述的資料，我們評估了日本用在廢棄物焚化廠上的總花費。圖四顯示，包含收入在內的詳細支出之趨勢。發現每年幾乎有 6,000 億日圓到 8,000 億日圓(50 億到 70 億美元)用在興建廢棄物焚化廠上。然而，必須要注意的是，這不足以反應特定會計年度裡計畫的總支出；這是因為國家補助和地方政府舉債之間的執行年度並不一致，而且那些以其他替代性代表數目所做的特定假設的資料，到目前為止也尚未取得。因此，總支出裡有 10%～20%是用國家財政來支應，其餘的（80%～90%）是由當地政府的支出來支應。再次，必須注意最近由政府補助的計畫金額看起來很小，因此或許不能正確反應最後的成本。

4. 結論

4.1 稅收注入焚化廠的機制

幾乎有50%～80%的焚化廠建設成本，最終是由中央政府透過補助和稅收基金來協助地方政府。換句話說，在這個機制下，每個地方政府所需支付的稅收非常少。地方政府在第一個會計年度裡所負擔的稅收比例佔總支出的比例低於2.5%。甚且，在計畫完成之後，本來地方政府要超過十年以上償還的借款部分，中央資金也會加以分擔；這些措施都盡力降低地方政府的財政負擔。這些機制，在其他的公共工程建設，像興建水壩，也都是一樣。結果，每一個地方政府的政策都會大大地受到中央政府所左右，特別是中央的補助以及稅收基金；這是使得地方政府不能有效獨立地制定政策的原因之一。

4.2 綜觀用於焚化廠的稅收支出

發現從中央支出和地方支出，幾乎每年有 6,000 億至 8,000 億日圓（50 億到 70 億美元）用在興建焚化廠上。在 2000 會計年度裡，由於加強廢氣排放戴奧管制的新規定即將在 2002 年 12 月起生效，補助既存焚化廠計畫的數目增加為 1995 年和 1996 年的 10 倍。這顯示那些既存焚化爐在興建和操作上並不在意戴奧辛的排放。

4.3 廢棄物焚化政策轉變成以大型和區域性焚化廠為主

有個政策要求在 1998 會計年度以前，每個地區都應自行焚化和清除廢棄物。然而，前厚生省基於轉為興建大型和區域性焚化廠（原則上，補助的最低門檻是焚化量要高於每日 100 公噸以上）的政策，已經在 1998 會計年度大規模地改變國家補助的系統。

政策轉變帶來非常顯著的影響。1998 會計年度由國家補助的焚化廠平均規模，與之前的規模比起來大上 2 倍。另一方面，補助計畫的數量在同時期減少了 1/3。這個證據顯示日本廢棄物管理政策很明顯地有了 180 度的轉變，而全國以區域性收集廢棄物及興建大型焚化廠來加強焚化。

然而，前厚生省卻在 2000 會計年度的時候取消這個國家補助最低門檻的限制。這是因為有幾個人口密度很低的農業區之地方政府強烈反對此政策的轉變。很自然地，區域性垃圾收集對那些小的地方政府來講是很大的負擔。但是，既然中央政府堅持區域性廢棄物管理的原則，就不至於改變興建區域性及大型的焚化廠。

4.4 對區域性及大型焚化廠的憂慮

這幾年來，在日本已經建立了各種有關資源回收的法律及規定。同時，廢棄物的數量也在穩定地下降。據報導，東京有些大型焚化爐的使用率逐漸下降，且廢棄物不足已成為事實。這對日本大量依賴區域性及大型焚化廠之廢棄物管理政策的未來命運來講，是一個很大的啟示。這個政策很顯然地對於以減少我們社會的廢棄物，來建立永續社會的目標是互相違背的。換言之，我們必須認識到，過度依賴焚化的政策，會阻礙民眾建立資源回收社會的努力。

4.5 用於廢棄物焚化廠的稅收花費曖昧不清

經由上述的研究分析，顯而易見地，日本有關用於焚化廠的總稅收花費被隱匿起來，民眾無法清楚了解。不同層級的政府機關有關稅收使用的機制相當複

雜，像先前的厚生省(現為環境部)、內務省(現為內政部)、以及縣級政府和地方政府，就是根據不同的法律及規定在使用他們的稅收。雖然每個部會及各級政府當局對於他們使用經費的情形都有完整的資訊（像是，環境部對全國的補助、內政部對地方政府的舉債、以及地方政府對計畫的基本花費），但是他們並沒有以適當的方式來製作這些相關的文件及資料，公佈給納稅人知道。

除外，修正後的規範（厚厚的冊子）條列每年國家補助分配給每個地方政府的詳細條件和比例。這些規範手冊由政府體制外的組織日本廢棄物管理協會出版和銷售。

更甚者，承包各種公共工程的承包商之間存有非法的勾結，這在最近也變得很醒目，連廢棄物焚化廠興建的案子也不例外。1999 年 8 月時，公平交易委員會針對五大公司違反「反托拉斯法」公佈了一則排除建議，這五大公司在每日 100 噸以上的大型焚化爐佔有 70%的市場。再者，在同一年裡，有 292 個戴奧辛分析實驗室也收到公平交易委員會的通知。從這些證據來看，日本有關戴奧辛防制設施之稅收支出極不公平、不合理以及不透明化。綠色和平組織打算要繼續調查和報導這個重要的議題。

5. 綠色和平組織的要求：

即將進行的持久性有機污染物的斯德哥爾摩會議，很明白地確認焚化是產生副產物持久性有機污染物（像是戴奧辛、夫喃、六氯苯、多氯聯苯）最可能的重要來源。為了達成這個會議清除副產物持久性有機污染物的終極目標，意即不應再繼續對焚化設施投資及補助，而中央政府及地方政府應對預防廢棄物產生、重複使用及回收再利用直接補助和退稅。雖然日本廢棄物管理的責任主要是在地方政府，可是很清楚地可以看出，中央政府目前利用補助和退稅的方式來推動焚化。

為了更進一步擺脫焚化的直接廢棄物管理的做法，中央政府也應該訂定明確的政策及執行計畫，以便在極短的時間內抑制焚化方式的擴張，以及禁用焚化的方式；這樣做有其必要，因為焚化是持久性有機污染物重要的來源，而必須加以清除。焚化方式也會散佈其他有毒物質到環境中，像重金屬，而且已被確認是造成焚化爐附近社區廣泛的健康影響之因素。焚化方式也是一種非常昂貴的摧毀有價值的資源之方法，而其成本卻要居住在焚化爐附近的社區來承擔。

斯德哥爾摩公約：

終止廢棄物焚化開步走的標記?

今年5月22日在瑞典的斯德哥爾摩，國際社區聯盟採納了斯德哥爾摩公約－這是一個新的國際公約，主要目的是要去除12種持久性有機污染物質。布奇尼先生（John Buccini）為該會議的協商主席，他聲明這一公約要消除12種持久性最久的有機污染物。在同一日，全球取代焚化爐聯盟（Global Alliance for Incinerator alternatives，簡稱GAIA）同聲發佈新聞稿反對焚化。

事實上，一般講起來，此公約給反對毒物活動人士新的努力方法，可是它也嚴肅意味著廚餘焚化對全球性的危機。這一公約，賦予反對運動新和有力的工具來遊說全世界立法諸公，來訂定不會對環境造成危害的處理廚餘的法案。

就像所有的國際條款，它是建立在經過協商而達成的共識基礎上，所以其程度也是降低到各國均能接受的最低條件。但斯德哥爾摩公約尚不能稱為環保上的傑作，因為公約裡還有一些語意不清的詞彙。雖然如此，這一個語彙尚不夠沉穩清晰的公約，仍然是基於善意所訂定的，也對焚化處理的方式投以最懷疑的態度。

當然，這條公約的實現需要有市民社會（civil society）的承擔，還有更多的工作需要許多國家及國際社會來做強有力的說服，及願意履行公約。當公約被採納時，就意味著對真理的爭執開始了。不用說，有很多企業搶著出售標榜可以處理POPs危機的焚化爐，因此我們也要針對那些繞著地球跑的企業廠商以及污染製造者，大聲表達反對的意見並且形成策略性的反對方案。

極小化/消除戴奧辛和弗喃

第一個要面對的公佈事項(第五節)有：弗喃、戴奧辛、多氯聯苯、六角氯苯等意外產生的持久性有機物質，這幾個都在一開始就已經被鎖定在那12個標靶裡。因此，公約設定「連續性的極小化」（continuing minimization）以及「可以根除」（feasible、ultimate elimination）目標，要求參加公約的所有國家在兩年內提出確認意外產生的持久性有機物質的行動方案，並要求以「對環境最好的實施辦法」（best environmental practices）、「可運用的最好技術」（best available techniques）來減少污染物的生成、並設法消除已存在的污染物。

而其他不是意外生成的POPs（像是aldrin、chlordane、dieldrin、DDT、endrin、

heptachlor、mirex、toxaphene、PCBs）及其他化學物品，當中一些已經獲得全球的共識要減少生產。至於屬於副產物性質的 POPs（像是戴奧辛及弗喃），雖然公約沒有直接點名，但是公約仍然設定了一個廣闊的範疇要大家遵守，不但包括所有的氯氣工業及其產物，像是 PVC 塑膠、有氯溶劑等，還有那些會產生戴奧辛及弗喃的生產線製程與廢棄物處理技術。焚化爐也在這範圍內，因為不管再怎麼設計焚化爐，焚化爐在焚化廢棄物時，就是會產生不同程度的戴奧辛及弗喃等副產物。斯德哥爾摩公約所附的附件裡，就列有一系列可能會在運作過程中產生 POPs 副產物的來源，包括：廢棄物焚化爐，不論是處理都市、有害的、醫療的、或是處理下水道污泥等。

那些倡導使用焚化爐的人士，毫不令人意外地，就像他們以前做過的事情一樣，企圖在公約所寫定的字裡尋找對他們有利的解釋。公約是用「釋放」（release）戴奧辛或弗喃，而非「製造」（production）戴奧辛或弗喃。因此，他們說可以用空氣污染防治設備以及集塵器將 POPs 抓下來，使戴奧辛或弗喃不會「釋放」（release）到環境中。可是在此處還有一點要強調的是，公約中有一個段落，要求參加的國家必須「形成一種發展方式，而這種發展方式要能夠以合適的替代物質去進行生產、製造，使得製程不會產生（formation）或釋放戴奧辛與弗喃到環境中」，因為公約在「替代原則」（Substitution Principle）中特別用到產生（formation）這個字眼，使得想要把公約曲解成贊成焚化爐之興建變得很困難。

持久性有機污染物處理的新範例－不貯存、不燃燒（no deposit、no burn）

公約的第二個部分（第六節）提到未來的焚化爐要能破壞 POPs，包括過期的滅蟲劑、PCB 及戴奧辛庫存物（Dioxin stockpiles）。公約在這一部份所建立的是一個先進的高標準，使得反對焚化爐的人士有一項新的工具可以要求以適當的方式來處理有害危險廢棄物。公約要求參加的國家針對 POPs 採取一些行動：

> 「以可以完全破壞或不會反而再度形成 POPs 的方式來處理廢棄物，使得這些既存的化學物質不再展現 POPs 的特色」

雖然上面這一段文章仍含有一些語意不清的詞彙，像是「低層級的 POPs」（low levels of POPs）尚待盡一步的闡明，還有「破壞或不會反而再度形成，使這些既存的物質不再展現 POPs 的特色」（”destroyed or irreversibly transformed”so that they do not exhibit the characteristics of POPs），究竟是指所有的衍生物（outputs），還是只是之前國際法已經講明的那些化學廢棄物。此外，斯德哥爾摩公約還特別表示 POPs 是一種無論用任何方式都不能再回收的物質。

這種語言意味著除非可以證明 POPs 的性質可以成為例外，不然 POPs 廢棄物也不再可以隨意處置（像是 landfilling、deep-well injection、sub-seabed disposal 等等種種選擇）。POPs 不可以回收再利用，也不能夠以焚化的方式來處置。如果所選用的處置方式最後會產生 POPs 或 POPs-like 的物質也在禁止範圍內。

目前，大多數的政府仍允許 POPs 的庫存貨可以焚化處理。到目前為止，焚化仍被認為是適當的處理方法，即便是已經知道焚化會產生像戴但奧辛或弗喃的 POPs 物質，而這些物質偏偏只能以不甚完美、且成本高昂的方式來預防他們任意地排放到空氣中。現在，很清楚的是即便是號稱為「最先進的」(most advanced）焚化爐都很難達到斯德哥爾摩公約針對 POPs 物質排放所定下的標準。即便是那些在空氣污染防治設備中重新發現的戴奧辛，比方說在飛灰裡的戴奧辛，也即將納入管制範圍內。

替代焚化之道

不斷來自 GAIA、IPEN（International POPs Elimination Network）、HCWN（Health Care Without Harm）、BAN（Basel Action Network）以及 PAN（Pesticide Action Network）等組織的壓力，非常可能使各地政府必須承認焚化爐是最需要有替代方案來取代的技術。因此，全球各地努力去除 POPs 的行動將會賦予新的生命及重要意義給那些存在已久的古老處理方式或是那些新的、正在興起的廢棄物管理方法，而這些方法可以預防或是降低廢棄物的產生，或是可以確切將有害廢棄物的毒性破壞。

這些方式有：減少包裝、不要用那些用過即丟或使用壽命很短的產品、不要使用有毒的原料、不要合成、資源分類、無害廢棄物再利用、利用新的不會產生 POPs 的化學或生物技術。

如上所綜述，斯德哥爾摩公約給予反對運動一個強力的、國際性的、有合法性的工具，來阻止那些錯誤的焚化爐技術繼續被延用。這些政策伴隨著有利的經濟論證，並可能形成一個完整的工具箱（toolbox），使焚化爐的替代方案可以普及成為大眾常識，讓我們給焚化廢棄物的方法寫下終結篇。

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『電子廢棄物回收』宣言
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引言:

在工業世界中，棄置的電子設備產生是成長最快速的廢棄物來源之一，因為它有逐漸增加的銷售額和極為快速的淘汰率。電子設備也被認為是廢棄物中重金屬和有機污染物最主要的來源。若是沒有有效的階段性撤銷這些危險化學物並發展有效的收集、重新使用和回收系統，高毒性物質會繼續的污染土壤、水以及空氣，對野生生物與人類造成威脅。

『電子廢棄物』運動是為了支持”生產者延伸責任” (Extended Producer Responsibi-lity，EPR)這項針對使用後電子廢棄物的引導性原則而產生的。”生產者延伸責任”的目的是為了使廠商及批發商在其產品被拋棄時在財務上負責。我們最終的目標是防止污染並減少廢棄物。這些可經由一系列的操作，包括減少零件、重複使用、重新製造和資源回收。

現今收集、管理及丟棄這些電子廢棄物的費用——包括家用有毒廢棄物的收集和拋棄有毒廢棄物地點的清理——是依據政府由納稅人付費的方案，且主要為地區性。我們希望由製造商和批發商來對這些費用負責，這樣他們才可將這些費用納入並反映在商品售價上。這樣一來，製造商便有強烈的動機設計清潔、安全、耐用、可重複使用、可更新且易拆解和回收的產品來減低這些費用。

變革較快的公司將比遲緩的公司要有更多的競爭力。遍及歐亞的許多國家中早已有很多公司已經執行期政府的”展延生產者責任制”。

為了達到電子展延生產者責任制度，我們已經採用了以下的宣言：

將它收回！

財務與/或物質的責任負擔.

電子設備的製造商與經銷商必須對產品於其生命週期全程承擔財務與/或物質的責任，包括一些特殊的回收或終止生產販售的管理特例。此責任負擔必須包括：

□減少製造過程中危險材料的使用量；

□儘可能的收集、拆解、重複使用並回收廢棄的電腦設備；

□以善待環境方式進行資源回收是必要的。

公共建設的發展.

□生產者延伸責任可促進有效率、環境友善並永續的公共建設以用於收集、重新利用、重新製造並回收電子廢棄物。

禁止危險廢棄物的輸出.
□聯邦政府英明令禁止由廢棄電子設備產生的危險物質之輸出。

解放納稅人.
□我們反對地方政府依其方案，如家用危險廢棄物方案，強迫納稅人對電子廢棄物的收集、回收與丟棄付費。

社區重新投資.
□於電子"收回"系統下發展的回收用公共建設應支持地方在家庭重複使用、再製造和回收處理系統所做的經濟建設。

將費用內部化.
□展延生產者責任制將電子產品的生命最終管理費用經由納稅人本身轉嫁至工業以達成費用內部化，如此一來對實行"收回"與回收計劃的公司並不會構成太大的不利條件。

資源回收的目標.
□電子工業應達成積極的回收目標並實行追蹤與公告。

<u>使它乾淨！</u>

採用預警原則.
□當可能對健康或環境造成威脅時，預警途徑是必要的，甚至在科學尚未證實的確有害前就應採取預防的措施。

階段性去除危險材料.
□電子工業應終止使用對人體及環境危險的化學物(包括鉛、汞、鎘、溴化防燃劑、含氯溶劑以及其他危險物質。

適當處理危險物質.
□電子產品製造商應保障員工、大眾及環境免於危險物質侵害直到發展並使用更安全的替代物。

為環境規劃.
□電子產品製造商應發展並使用更安全、毒性較低的原料；規劃產品的耐久性、可升級及拆解；避免再設計拋棄式產品；以及在整個產品的生命週期中減低對水及能量的消耗量。

閉合圈式資源回收.
電子產品製造商應研發易修復與升級的產品以延長其使用期；合併回收的資源與用於再製造的零件製成新產品；並發展閉合式的材料循環。

零廢棄.
此目標是用於禁止將所有的廢棄電子零件填土掩埋或焚化，並阻止對環境不友

善的回收行為。

<u>**公平勞動！**</u>

保護勞工.

□電子產品製造商應在整個產品鏈中，對於製造及回收之設施使用較高的職業健康與安全標準

合理工資

□電子產品製造商應給予所有生產線上的勞工——包括加工者——可維生的薪資。

組織的權利

□電子產品製造商應認可在整個生產線上的勞工對電子零件製造設備及回收設施有組織的權利。

臺北市垃圾處理現況與未來發展

臺北市政府環境保護局

壹、垃圾處理現況：

本市垃圾處理原採以焚化為主、掩埋為輔之政策，目前臺北市有三座垃圾焚化廠，分別為內湖廠（設計每日處理量九〇〇公噸）、木柵廠（設計每日處理量一、五〇〇公噸）、北投廠（設計每日處理量一、八〇〇公噸），如全量運轉，可焚化處理本市絕大部分垃圾，另有乙座垃圾衛生掩埋場（第二掩埋場），位於南港區，總掩埋容積為六一七萬立方公尺，主要用於處理不可燃垃圾及焚化廠產生之焚化灰渣，目前剩餘容積約一四〇萬立方公尺，預定於西元二〇〇三年關閉，故環保局正積極進行第三垃圾衛生掩埋場闢建相關事宜。

由於掩埋、焚化等垃圾處理方式均屬非資源再生之處理，對於環境均有一定之影響，且將資源掩埋、焚化，亦違反永續利用之環保原則，故臺北市目前已改採減量化、資源化、處理多元化之垃圾處理政策，從源頭減量，鼓勵回收再利用，以減輕垃圾處理對環境造成之壓力，其採行之措施包括垃圾費隨袋徵收，家戶廚餘分離清運等，西元一九九九年，臺北市尚未實施垃圾費隨袋徵收前，平均每日由環保局區清潔隊收運之家戶垃圾與道路清掃垃圾量（以下簡稱一般垃圾）為二、九七〇公噸，非由環保局清運但交環保局垃圾衛生掩埋場及垃圾焚化廠代處理之一般廢棄物與一般事業廢棄物（以下簡稱事業垃圾）平均每日為八〇二公噸，合計每日總廢棄物量為三、七七二公噸。七月一日實施垃圾費隨袋徵收後，至九月三十日止，平均每日家戶垃圾減量為一、九一九公噸，惟每日事業垃圾增為一、〇〇六公噸，合計平均每日總廢棄物量為二、九二五公噸，較西元一九九九年日平均值三、七七二公噸，減量比率為百分之二二，十月一日起環保局週日停收垃圾後，至二〇〇一年六月三十日止，平均每日家戶垃圾減量為一、八九一公噸，每日事業垃圾變為一、〇〇〇公噸，合計平均

每日總廢棄物量為二、八九一公噸，較西元一九九九年日平均值三、七七二公噸，減量比率更提高至百分之廿三・四。

在資源回收量部分，西元一九九九年，臺北市尚未實施垃圾費隨袋徵收前，平均每日由環保局區清潔隊回收之資源垃圾為七十三公噸，二〇〇〇年七月一日實施垃圾費隨袋徵收後，至二〇〇一年四月三十日止，環保局平均每日回收之資源垃圾量為一七六公噸，資源回收率為百分之八・四六，接近一九九九年資源回收率平均值（百分之二・三八）的三・六倍。

由以上數據顯示臺北市實施垃圾減量政策後已確實達到促進垃圾減量、資源回收之效果，目前環保局亦正積極規劃二〇〇一年家戶廚餘全面分離清運工作，以期更進一步強化垃圾減量政策成果。

貳、垃圾處理未來展望：

本局規劃推動於 2020 年為目標達成本市廢棄物「零掩埋」及「全回收」的願景，使台北市成為符合地球永續發展的生態城市。其具體的做法簡述如下：

一、　達成「零掩埋」及「全回收」的廢棄物處理方式

（一）、實施隨袋徵收鼓勵家戶先行減量及分類回收

（二）、推動立法並執行限制或禁止產生大量廢棄物的產品

（三）、事業廢棄物自行或委託清運處理並強制分類回收

（四）、推動有機廢棄物回收再利用

（五）、引進設置垃圾全分類回收設施

（六）、大型廢棄物及建築廢棄物破碎分類回收

（七）、不可回收物焚化熱能回收

（八）、溝泥部分焚化

（九）、焚化灰渣再利用

二、 未來臺北市各類廢棄物及回收物數量推估

本市自八十九年七月一日實施垃圾費隨袋徵收起，垃圾量明顯減少，加以未來將再推動立法及執行，限制或禁止產生大量廢棄物的產品，促進源頭減量，初步推估除污水處理廠產生的污泥，未來將因污水廠的興建而持續增加外，其餘各類廢棄物及回收物數量約可維持於八十九年下半年的水準而不再成長。隨袋徵收後本市各類廢棄物及回收物的數量估計如下：

(一)、家戶垃圾，每日約 2220 公噸，其中包括

1. 有機性廢棄物約 917 公噸/日(家庭廚餘 600 公噸/日，餐廳廚餘 310 公噸/日，學校鄰里公園落葉 7 公噸/日)
2. 巨大廢棄物約 50 公噸/日
3. 一般市場產生的有機性廢棄物 100 公噸/日
4. 一般廢棄物 943 公噸/日
5. 資源回收物 210 公噸/日

(二)、事業廢棄物，每日約 1000 公噸，其中包括

1. 公園處收集產生的落葉約 11 公噸/日
2. 批發市場產生的有機性廢棄物約 100 公噸/日
3. 不適燃的事業廢棄物約 145 公噸/日
4. 適燃性的事業廢棄物約 700 公噸/日
5. 營建廢棄物約 44 公噸/日

(三)、溝泥，每日約 250 公噸(含水率 90%)

(四)、污水處理廠產生的污泥，每日約 100 公噸

(五)、動物糞便，每日約 2 公噸

三、 未來臺北市廢棄物及資源回收處理設施需求

上述各類廢棄物及回收物中，污水廠污泥及動物糞便分別將由衛工處及動物園自行以焚化或堆肥方式處理，其餘廢棄物及回收物的處

理除利用原有焚化設施外，尚需下列設施：

（一）、堆肥廠(1800公噸/日)：處理廚餘及有機廢棄物

（二）、資源回收物分類廠(260公噸/日）：資源回收物再分類使用

（三）、垃圾全分類回收處理廠(2000公噸/日)：垃圾經此再分類後再予送焚化廠垃圾。

（四）、大型廢棄物及建築廢棄物破碎分類回收設施(100公噸/日)

（五）、資源回收物變賣前貯存及前處理設施(800公噸/日)

（六）、焚化灰渣熔融或固化回收再利用設施(500公噸/日)

（七）、掩埋場：完全回收前的過渡期間掩埋需求，及廢棄物經中間處理後無法再利用的最終產物掩埋用及意外狀況的緊急處理用，其容量至少需300萬公噸或500萬立方公尺。

四、　增設本市資源回收設施初步構想

1. 為達成2020年「零掩埋」與「全回收」的願景，本市仍需建設有機廢棄物處理廠、垃圾全分類回收設施、大型廢棄物建築廢棄物破碎分類回收場及焚化灰渣再利用廠等設施。
2. 本局將檢討現有的各垃圾處理場廠的餘裕土地漸進規劃，並以節省公部門支出及藉助民間企業經營效率的B.O.T案為選商原則。
3. 初步將甄選廠商於北投垃圾焚化廠廠區內原醫療廢棄物焚化爐用地設置堆肥廠或有機廢棄物處理設施；於內湖焚化廠設置垃圾全分類設施；於山豬窟掩埋場設置大型廢棄物及建築廢棄物破碎分類回收場，再逐步將堆肥廠及全分類回收設施擴充設置於內湖及木柵焚化廠內或附近；將大型廢棄物及建築廢棄物破碎分類回收場擴充設置掩埋場內。
4. 灰渣再利用設施可於本局所有上述四處垃圾處理場（廠）址設置。
5. 為便於統計家戶廚餘量以設計後續堆肥廠容量，並為公平對待各行政區之市民，本局將不待所有堆肥設施完成，運用本局既有清運車輛及人力先行推出全市廚餘分離清運措施。

五、臺北市有機廢棄物再利用推動方案

本市學校、公園及鄰里公園落葉，果菜公司的果菜殘渣，餐廳的廚餘及餿水，家戶廚餘，衛工處污水處理場污泥，市立動物園動物糞便等各類有機廢棄物每日約有一、二三〇公噸，佔全部垃圾量比率高達百分的三十五，如能加以資源回收再利用，將大大提升資源回收目標，故本府已訂定「臺北市有機廢棄物再利用推動方案」將責成本府各相關權責單位推動落實，俾全面推動本市有機廢棄物再利用工作。

未來做法及分工如下：

（一）、落葉：每日約 18 公噸，由教育局（2 公噸）、民政局（5 公噸）及公園處（11 公噸）推廣輔導就地堆肥處理。

（二）、市場有機廢棄物：每日約 200 公噸（本局運送 100 公噸，代清運業者運送 100 公噸），由市場管理處輔導與養豬業者合作再利用或自行或委託堆肥處理。

（三）、餐廳廚餘：每日約 310 公噸，由本局輔導餐飲業者與養豬業者合作再利用或進行其他再利用方式。

（四）、家戶廚餘：每日約 600 公噸，除鼓勵社區自行收集堆肥外，由本局或委由民間分類回收並設置廚餘堆肥場處理。

（五）、污泥：每日約 100 公噸，由衛工處或委由民間設立堆肥場就地堆肥處理。

（六）、動物糞便：每日約 2 公噸，由動物園就地堆肥處理。

六、達成「零掩埋」構想及期程

（一）、為達成公元 2020 年以前本市垃圾可達「零掩埋」的願景，前述各項廢棄物處理設施的設置期程勢需妥予規劃，俾充分因應各類廢棄物處理需求，以及實現「垃圾減量」、「資源回收」的目標。鑒於本市自八十九年七月一日實施垃圾費隨袋徵收起，垃圾量成長已有緩和的趨勢，故各項廢棄物處理設施的設置規模如以保守

計，暫以八十九年下半年的各類廢棄物產量為規劃依據，則其各別設置時程詳如附表，並分別說明如下：

1. 公元 2001 年~2005 年

本段期間除本市三座焚化廠外，需完成餐廳廚餘養豬每日 150 公噸、本局試辦每日 30 公噸的堆肥廠、公園學校落葉堆肥每日 18 公噸、巨大廢棄物的粉碎分類設施每日 100 公噸，以及實施廢棄物強制分類，故包括焚化灰渣及溝泥等，初估每日計約有 698 公噸待掩埋垃圾堆放於山豬窟垃圾衛生掩埋場，四年掩埋總量估計約 100 萬公噸（180 萬立方公尺）。此段期間每日需焚化的垃圾約有 2，451 公噸。

2. 公元 2006 年~2010 年

本段期間包括增設每日可處理 900 公噸的堆肥廠及 300 公噸的垃圾全分類處理先驅工廠，故初估每日待掩埋的焚化灰渣、無法堆肥物質及分類剩餘物等，計每日約有 466 公噸尚待掩埋，五年掩埋總量合計估計約 90 萬公噸（150 萬立方公尺）。此段期間每日需焚化的垃圾約有 1，541 公噸。

3. 公元 2011 年~2015 年

本段期間除增設每日處理 500 公噸有機垃圾的堆肥廠、增設每日可處理 1600 公噸的垃圾全分類回收廠，故初估每日待掩埋的焚化灰渣、無法堆肥物質及分類剩餘物等，計每日約有 212 公噸尚待掩埋，五年掩埋總量合計估計約 45 萬公噸（75 萬立方公尺）。此段期間每日需焚化的垃圾約有 775 公噸。

4. 公元 2016 年~2020 年

本段期間預期因科技的進步而熔融及固化再利用設施應可 2020 年設置完成，故前述焚化灰渣、無法堆肥物質及分類剩餘物等，均可有效再利用，達成廢棄物「零掩埋」的目標，但在 2015~2019 年間的掩埋總量仍以 45 萬公噸（75 萬立方公尺）估計。

（二）、「零掩埋」及「全回收」成功的關鍵因素

「零掩埋」及「全回收」（物質及能源回收）的各階段減量目標是否可以達成的關鍵因素在於資源回收後再利用產品的市場是否建立，政府是否適時採用適當的補貼政策，提供回收作業所需用地，使原來在自由市場下沒有競爭力的產品及相關資源回收事業得到生存及成長空間，以及經濟可行的資源回收再利用技術（例如焚化灰渣熔融或固化作為建材再利用）是否及時成為商業化成熟的技術。除了以上的可能因素外，由於此規劃涉及層面相當廣泛，包括中央及地方法令、相關配套措施等細節，仍有待建立及釐清，目前雖尚未形成具體政策，惟環保局將會朝此方向努力及邁進。

國 家 報 告

台　灣

看守台灣協會、綠色公民行動聯盟

一、垃圾現況

根據八十九年版《環境白皮書》所統計的民國 88 年垃圾量：

◇一般家戶垃圾：約 845.74 萬公噸，每人每日約 1.08 公斤。

◇工業廢棄物產出量約 1947 萬公噸，其中有害事業廢棄物占 161 萬公噸，妥善處理率僅達 63%。

◇醫療廢棄物約 9.02 萬噸，其中感染性事業廢棄物占 15%，約 1.35 萬噸(目前已有 37 座醫療焚化爐通過試燒)。

◇農業廢棄物：包括稻穀、死亡禽畜、市場廢棄物、農牧廢棄物等，約 9609 萬噸，妥善處理率約 49%。

◇合計：約 12411 萬公噸

二、台灣焚化爐興建政策沿革

◇民國 75 年行政院科技會議將焚化定為中長程垃圾處理辦法，於民國 80 年核訂「台灣地區垃圾資源回收廠興建計畫」，規劃公有民營或公有公營焚化爐共 21 座(見表 1)。

◇民國 85 年，因考量地方財政緊迫與發展國內環保產業，訂定「小型一般廢棄物焚化爐興建計畫」，鼓勵民營機構興建營運焚化爐，又核定 15 座 BOO/BOT 焚化爐(見表 2)。

◇針對部分離島、水源特定區訂定「小型一般廢棄物焚化爐興建計畫」，計畫於民國 83 年 7 月至 91 年 12 月間興建 10 座小型焚化爐，處理量共計 150 公噸。(至 88 年底已完工 4 座，施工 2 座，招標 1 座，規劃中 2 座)

◇為解決某些大型爐未完工前的垃圾問題，又定「過渡時期緊急垃圾處理計畫」，規劃於 87 年 7 月至 91 年 6 月興建 12 座總處理量 350 噸之民有民營小型焚化爐。(至 88 年底已核定 8 處，總處理量 184 公噸，1 處已完工，6 處完成發包，1 處正在辦理。)

三、焚化爐戴奧辛的監測問題

(一)監測標準制定緩不濟急，拿人命開玩笑

內湖大型焚化爐於 1992 年 1 月開始運作，規範焚化爐的戴奧辛排放標準(0.1 ng-TEQ/Nm^3)在 1997 年 8 月才制定出來，而且僅規範大型爐。1997 年以前核准的大型焚化爐，自 2001 年 8 月起才適用此規範。

規範中小型焚化爐的戴奧辛排放標準(日處理量 96 公噸以下為 0.5 ng-TEQ/N m^3，日處理量 96 公噸以上為 0.1 ng-TEQ/N m^3)在 2000 年 10 月才制定，且於 2003 年才適用 (日處理量低於 96 公噸者，2004 年才需符合標準)。

今年 5 月 10 日至 6 月 10 日間，環保署南區稽查大隊針對美濃小型焚化爐連續駐廠監測一個月，所測得的平均值為 17 ng-TEQ/N m^3，而其中一個樣本竟高達 50 ng-TEQ/N !但是我們的《中小型廢棄物焚化爐戴奧辛管制及排放標準》要到 2003 年才有適用!!

(二)戴奧辛監測根本無法解決問題

戴奧辛無法連續監測，且監測費用昂貴，一年只檢測一次；廠商可以在檢測時選擇垃圾種類、控制燃燒溫度，甚至加裝活性碳設備(如今年 5 月美濃小型焚化爐即在監測時才裝上活性碳裝置，以求改善污染)，平時則發揮民營化的精神——勤儉持家，能省則省。

當垃圾量不足時，或機械發生問題時，焚化爐停爐再起爐，溫度由八九百度降至常溫，乃是戴奧辛產生的最佳溫度，這段期間空氣防污設備無法發生作用，大量戴奧辛及夫喃、重金屬等有害物質大量散溢。

和核電廠的道理一樣，設備再精密的焚化爐，也會有人為操作上的有意的省略與無意的疏失!一但發生問題，後果無人能承擔。

去年一月木柵焚化爐緊急跳電，廠方並未通知附近居民緊急疏散，直到居民因聞到惡臭受不了，向媒體求證，事情才爆發，期間所排出的戴奧辛已經對居民造成嚴重傷害！

四、焚化爐的灰渣問題

垃圾在焚化爐燃燒後，變成廢氣和灰燼(底灰)。空氣防污設備，可以抓取排放至空氣中的有害物質，但卻把毒氣轉化成固體：飛灰。根據質量不滅的道理，越精密的空氣防污設備所吸附下來的飛灰的毒性越高。

台灣的環境法規竟然 允許將飛灰與底灰混合(混合後稱為灰渣)，充當掩埋場的覆土。台北市山豬窟掩埋場的灰渣露天傾倒，雖風飄揚，嚴重影響到掩埋場作業人員與北市環保局人員的安全!!(圖 1)

台灣的焚化爐飛灰尚未完全固化處理，美濃小型焚化爐的灰渣因無處掩埋，竟以帆布袋裝著堆置廠區，若遇大雨更是有污染地下水(高屏地區水源頭：荖農溪)之危險!(圖 2)

1994 年 5 月，美國最高法院判決焚化爐灰渣為有毒廢棄物，現在台灣環保署竟然計劃邀請民間投入灰渣再生計劃，將劇毒物質固化後製成我們日常生活常會接觸到的道路底基、地磚、隔音牆等，經過一段漫長的時間難保固化設施不會崩壞。

五、環保署的垃圾政策自我矛盾!!

根據環保署估算的 89 年家戶垃圾清運量(民國 90 年 5 月，環保統計月報)為 8367272 噸，減掉資源回收量 477856 噸，僅剩 7889416 噸，每日約 21615 噸。

而 21 座公營焚化爐每日共可處理 2.19 萬噸垃圾，15 座民營焚化爐每日可處理 0.85 萬噸，合計共 3.04 萬噸，尚不包括「小型一般廢棄物焚化爐興建計劃」與「過渡時期緊急垃圾處理計劃」所核定的小型焚化爐的處理量。

3.04 萬噸/日的處理量，明顯比民國 89 年的 2.16 萬噸/日多出 0.88 萬噸，即將造成垃圾不夠燒的窘境。但根據「鼓勵公民營機構興建營運焚化廠推動方案」，

不論垃圾是否達到簽約量，均需付給廠商約定好的噸數的處理費，冤枉納稅人的錢!

環保署統計，台灣區垃圾中可以回收再利用的部分占其總量40%(環境白皮書，民國八十九年版，頁290)，其垃圾政策也轉向成為「**垃圾減量、回收、再利用為主，清理為輔**」(環保政策月刊中文版 vol. 3, no.17)，與其繼續興建焚化爐的政策互相矛盾。以民國89年的數據來推算，若確實實行資源回收政策，垃圾量將減去40%，僅剩4996605.6噸，每日約1.40萬噸，何需日處理3.04萬噸的焚化爐?

另外，環保署有意將「一般事業廢棄物」納入家戶垃圾的處理體系，但許多「一般事業廢棄物」平日已併在家戶垃圾中清運掉了。我們擔心的是，政府是否會將「有害事業廢棄物」也納入家戶垃圾的焚化體系處理，屆時居民的健康更是沒有保障!

六、台灣反焚化爐情形:

嘉義大林，新竹的原住民部落五峰鄉、尖石鄉，以及台中大安因為當地居的努力，已經成功地阻擋了焚職化爐的興建，美濃於去年兩度圍廠，原本前環保署長已同意賠錢關廠，不幸新任署長上來後，不願賠償，以監測來應付。今年6月報告顯示排放超過標準500多倍！美濃人正持續與之對抗。正在努力阻擋焚化爐興建的地區尚有彰化鹿港，雲林林內、台中豐原等等。

台灣21座公辦焚化爐
21 Large incinerators (Publicly-Owned)

	設置地點 Location	日處理量 (噸/日) capacity	主管機關	竣工日期	代為操作的包商 operation company
1	內湖 NeiHu, Taipei	900 ton/day	北市環保局	1992.01.24	無
2	木柵 Mucha, Taipei	1500 ton/day	北市環保局	1994.07.21	無
3	台北縣新店市 Hsin Tien Taipei	900 ton/day	環保署	1994.05.28	信鼎
4	台中市 Taichung	900 ton/day	台灣省環保處	1995.05.08	達和
5	台北縣樹林鎮 Shulin, Taipei	1350 ton/day	環保署	1995.06.01	達和
6	嘉義市 Chiayi	300 ton/day	台灣省環保處	1998.11.18	達和
7	北投 PeiTou, Taipei	1800 ton/day	北市環保局	1999.05.26	無
8	台南市	900	台灣省環保	1999.08.17	信鼎

	Tainan	ton/day	處		
9	高雄市中區 Kaohsiung Centrum	900 ton/day	高雄市環保局	1999.09.01	無
10	高雄市南區 Kaohsiung South	1800 ton/day	高雄市環保局	2000.01.20	無
11	高雄縣仁武鄉 JinWu, Kaohsiung	1350 ton/day	環保署	2000.05.16	太古昇達
12	台中縣后里鄉 Houli, Taichung	900 ton/day	環保署	2000.08.14	日立造船
13	新竹市 Hsinchu	900 ton/day	環保署	2000.10.24	中興電工
14	屏東縣崁頂鄉 KenDing, Pintung	900 ton/day	環保署	2000.12.16	川崎重工
15	彰化縣溪洲鄉 Shi-Jou, Chunhua	900 ton/day	環保署	2000.09	中油
16	台北縣八里鄉 Bali, Taipei	1350 ton/day	環保署	2001.06	
17	高雄縣岡山鎮 Gon-Shan, Kaohsiung	1350 ton/day	環保署	2001.11	
18	嘉義縣鹿草鄉 Lu-Tsou, Chiayi	900 ton/day	環保署	試燒中，預定 2001.12 完工	
19	台南縣永康市 Yun-Kong, Tainan	900 ton/day	環保署	施工中，預計 2003.12 完工	
20	宜蘭縣利澤 Li-Tzei, Iland	600 ton/day	環保署	終止合約，重新招標中	
21	基隆市 Keelung	600 ton/day	環保署	終止合約，重新招標中	

(表 1)

「鼓勵公民營機構興建營運垃圾焚化廠推動方案」所核定的 15 座焚化爐

	設置地點 Location	營運方式	日處理量 (噸/日) capacity	竣工日期	承包商 Contractor
1	桃園縣(南區中壢廠)	BOO	1200 ton/day	預定 91.5 完工，90.4 已開始試燒	長榮集團
2	新竹縣	BOO	300 ton/day	預定 2001.12 公開招標	

3	苗栗縣(竹南鎮)		500 ton/day	(因民眾抗爭，1999.11.23 公告廢標)預定 2001.12 重新招標	
4	台中縣(烏日鄉)		600 ton/day	2000.9.20 簽約	中鼎工程
5	南投縣	BOO	500 ton/day	預定 2001.12 公開招標	
6	彰化縣	BOO	800 ton/day	2000.4 簽約	達和
7	雲林縣	BOO	600 ton/day	目前僅達和一家通過環評,預定 7 月底開標	
8	台東縣	BOO	300 ton/day	2001.1 簽約	達和
9	台北縣(汐止)	BOO	300 ton/day	預定 2001.7 招標	無
10	桃園縣(北區廠)	BOO	800 ton/day	2000.6.8 開標	中鼎/長億
11	台中市	BOO	600 ton/day	(原環評未通過，廢標)重新招標,目前三家通過環評，預定 2001.8 截止收件	
12	台中縣(大安鄉)		500 ton/day	2000.5.18 廢止設置 cancelled	
13	台南縣(七股鄉)		900 ton/day	預定 2001.12 招標	
14	花蓮縣	BOO	400 ton/day	2001.3 招標中，預定 10.31 截止收件	
15	澎湖縣(湖西鄉)		200 ton/day	預定 2001.7 公告招標中	

(表 2)

巴基斯坦

世界野生動物基金

一個很通常的錯誤觀念，就是認為東西經燒就消失不見，可是物質是不能被消滅的，物質經過焚化爐焚燒後變為污染物如氣体、灰塵、化學物質及其他殘餘物而釋放出空氣中，開發中的國家如巴基斯坦情形更糟。

都市的固体廢棄物(MSW)收集在街道上貯藏箱裡，然後由市裡的公司經常去清除。固体廢棄物的發生率為 0.6 至 0.8 公斤/每人/每日，而每年增加 2.4%。廢棄物的 40%都留在原收集點或街上[2]，這些廢棄物都在空地上焚燒，居家廢棄物通常收集後，直接運輸到掩埋場，可是掩埋場的設計不良，而導致固体廢棄物的不完全分解，沼氣發生及滲透到地裡汙染地下水，在收集場不做廢棄物分類，也沒有適當的收集系統，廢棄物經不分別的拋棄，而有三種方法收集：１、箱形運搬車，２、拉圾箱車系統，及３、牛車。

在巴基斯坦卡車或曳引車用來拖運貨箱（櫃），但是因為沒有覆蓋的很完密而溢出，溢出的廢棄物都掉落在街道上而不能運到掩埋場，同樣的有些地方是由牛、駝車來收集固体廢棄物，牛車等從一條街到另一條街上去檢拾廢棄物，也是沒適當的檢拾系統，巴基斯坦的ＷＷＦ設計一張表格來填寫都市固体廢棄物處埋（ＭＳＷＭ），讓讀者一目瞭然有效率的固体廢棄物處理。[2]

政府己著手計劃將ＭＳＷＭ民營化，此計劃將從目前的資源回收及檢拾者的關係者中去收集及處理垃圾，由他們與個別家庭及企業界去安排垃圾分類及做資源回收，民營垃圾清理可以做到不收費收集分類的垃圾或付費給分類的物品。[4]

在巴基斯坦都市及醫院兩方面的廢棄物是很大的問題，每年在巴基斯的大小醫機構產生２５萬噸的醫療廢棄物，醫院的廢棄物加上都市廢棄物加深了問題的困難，單次使用針筒、胚胎、器官、塑膠瓶都錯誤的被棄置在空醫療廢棄場裡[1]，醫院及市公所焚燒廢棄物結果，產生多量的有毒氣体，不幸的是沒有儀器設備來測量毒氣排放量。

在巴基斯坦醫療焚化爐正獲得青睞，如歐洲捐贈者所支持的民營醫療廢棄物處理，就是一個例子，在此計劃下拉合都市的兩家醫院：沙拉媽醫院及基督聯合醫院，都裝置焚化爐該兩座焚化爐都聲稱符合在巴基斯坦的 NEQS 空氣排放量標準，可是該標準並不嚴格的保證安全操作。其他著名醫院：如拉合爾市的紹卡特與席克、查伊特兩家醫院及喀拉芝市的亞格哈可汗醫院都使用相同的焚化爐。此外政府也在喀拉芝市企業（ＫＭＣ）外裝了兩座值 70 萬 3 千 442 美元的焚化爐，來焚燒 KMC 所屬醫院的醫療廢棄物。巴基斯科學與工業研究院（PCSIR）也發出邀約建造焚燒醫療廢棄物 HWM 的焚化爐。

在 1981－1982 年間所建造於喀拉芝市醫院，為英製的兩座焚化爐，焚化容量為 250 公斤/小時，該焚化爐為手動推積及去灰的系統，沒有裝置煙道清除設備。有時因含有太多的水分，而引起不完全燃燒結果就排放黑煙。另一座在 1990－91 所建造的英製焚化爐裝在喀拉芝醫院，同樣為兩座手動裝填及去灰系統，也沒煙清除設備，焚化容量為 75 公斤/小時。情況惡劣因為低煙筒設計及設在人口擁擠的地方。[3]

1986 年在拉哈爾市的醫院，裝設了容量 170~180 公斤廢棄物/小時的手動充填去灰系統的日製焚化爐，因為焚化爐的設計不良，控制及已焚化不完全焚化之廢棄物接替都不良而排放黑煙。1993 年在伊斯蘭馬巴德的醫療科學院設置了四座無廠牌的美製焚化爐，可怕的是竟用塑膠袋裝填廢棄物來焚化而排放毒氣。[3]

最近巴基斯坦政府的衛生署在準備印製「醫院廢棄物處理指南」，該署坦承在巴基斯坦裝設的焚化爐都沒有排放管制及監測設備，該指南：

- 收歸醫院廢棄物為緊急管制
- 引進安全、更有效及永久性控制系統[3]

然而在巴基斯坦因為執法不嚴，焚化爐的技術尚有很多缺陷，WWF 正負起責任來喚醒國人及立法者，來認知焚化爐所衍生各種危險，各種報章雜誌也明顯的登出焚化爐技術可能導致的可怕致死衝擊。

對於所做的努力，巴基斯坦廢棄物處理部門都置之不顧，巴基斯坦的焚化爐技術部門正盲目的往前衝，我們要加強的去抑制它的擴散，最初的和最大的一步來反對焚化處理：就得喚起民眾政府及立法人員的警覺，廢棄物處理應從源頭做起。

適當的分類工作可以在廢棄物當中回收有用的資源，WWF 抱著很大的希望，要求國際上的支援，經援給開發中的國家如巴基斯坦等，非焚化廢棄物處技術我們覺得最重要的第一步：就是把事實攤在陽光下來徵求解決之道。

參考：

１. Factsheet on HMM
２. Factsheet on MSW
３. SDPI Research & News Bulletin Vol 8 , No2, March－April 2001
４. The Pakistan Natiarel Conservation Strategy （NCS）

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印度報告

Disha、Thanal 和 Toxics Link

目前印度政府管理廢棄物的方式仍然非常粗糙，即使是已經有一些人、團體以及非政府組織(NGOs)在推動一些其他不錯的替代管理方式。而且，有愈來愈多人相信如果管理廢棄物的方式不是著力在資源減量使用、分類、以及以社區為執行單位的方式來進行，那麼，這種管理方式既沒有經濟效益也不符合永續的目標。但是，印度政府到目前為止仍以末端處理的方式來管理廢棄物，因為印度政府必須面對來自國際基金等代辦機構、多邊國家的公司、外國顧問的壓力。

還有，必須知道印度是一個內部性質差異很大的國家、非常的分散。而且還有很多地方並沒有參與廢棄物管理議題的討論，同時他們也缺乏在印度這種國家脈絡下管理廢棄物應該具有的基本知識。

都市廢棄物管理方式—概況介紹

根據估計，印度每年產生 3650 萬噸的都市廢棄物。平均每噸的垃圾，從收集、運輸、中間處理到最後處置，要花 500~1500 的盧比(大約是 12~36 盧比:1 美元)。這個數據，約有 60~70%是花在收集垃圾上，20~30%是花在垃圾運輸上，最後剩不到 5%是花在最終的處置上。這些被收集起來的垃圾平均有 94%被丟棄在土地上，有 5%是以堆肥方式處理。印度的社會—經濟結構，使每人所產生的廢棄物量少於西方社會(雖然西方社會也有實行廢棄物資源回收及再利用，不過並不普遍就是了)，而且這些方式的實施基礎還在逐漸流失中。MSW 每年的實質數量會透過拾荒體系及二手市場來進行回收跟再利用的工作，但相對的也會對這些拾荒業者造成身體健康的危害以及回收物質貶值的結果。

直到 1980 年，管理廢棄物不論是對中央或地方政府來講都不是一個棘手的問題。但隨著生活模式的改變，廢棄物中的天然成分減少，不論是大都市或是才在都市化的鄉村地區全都蒙受廢棄物的威脅。今天，已經沒有任一個地方可以避免堆積如山的垃圾被積聚在街角或是路旁。人民或是環境的衛生品質，已經讓步給這些垃圾堆了。上一輩處理垃圾的簡單方法變成過時的價值，即便人們仍然記得過去歲月的美好，也已經無法學習過去那種可以簡單從容處理垃圾的經驗以及態度。今日，人民以及政府都想從這堆積如山的垃圾危機中找到一條解決的方法，因此，現在正是大好時機，而且有正當的根據，讓那些想要銷售焚化爐的廠商來到印度並且經營印度的市場。

至於今日，露天堆棄是造成民眾憤怒以及使用焚化爐來作為解決爭議的最主要原因。但是有許多自願團體已經相當積極地阻饒以焚化爐來處理 MSW 的政

策。即使是在許多國家，都已經使用各式各樣的焚化系統，像是焚化爐、熱裂解爐、pelletisation。可以將廢棄物轉變成能源的技術工廠也逐漸開始冒出頭來，並不是所有的技術都以焚燒為主要的處理方式。

在 Andhra Pradesh 有一種"生物氣象"(biomethanation)工廠以及 a pelletization project 已經完成。而且這個國家還在進行其他 3 種 WTE 計畫，預計可以從廢棄物當中得到 23.3 MW 的電力。Maharashtra (可以產生 4 MW)、Uttarpradesh (從 2 個計畫中可以得到 13 MW)，TamilNadu 是另一個打算完整執行各種不同階段的 WTE 計畫的城市。在 Perungudi,、Chennai (TamilNadu)的 WTE 工廠是由澳洲能源發展有限公司(Australian Company Energy Development Limited，EDL)來負責計畫執行的。這是一個示範計畫，而且該公司很希望藉由這個計畫使其他國家能夠採用他們的系統。這個過程是以氣化(gasification)的方式以及 SWERF 的技術來進行(不論 SWERF 究竟意指什麼)。已經有一些民眾抗議這個工廠，但是 EDL 的施工超過預定進度，也不在乎被當成原料的廢棄物沒有先進行分類而可能造成一些其他危險的不確定性。Zen Global Finance Ltd、Enkem Engineers Ltd、Future Fuels Engg (India) Pvt Ltd、Global Environment Engineering Ltd、Thermax Ltd、Excel Industries 以及 EDL 是印度最主要的 WTE 技術公司。

USAEP 已經提升管理廢棄物的技術，而且最近正在企圖要將 Plasma Arc Technology 賣給 Startech Environmental Corporation。雖然有很多國家對這種技術有興趣，但似乎過高的成本使他們怯步。荷蘭政府提供補助給位在 Kerala State 裡的 Cochin Shipyard 地方一家焚化爐廠商。

新能源部(The Ministry of Non-Conventional Energy Sources，MNES)長久以來致力於提升以及可以做到生態永續的替代技術(所提倡的能源生產方式，像是太陽能、風力發電)，現在也開始對 WTE 的計畫產生興趣。他們提供非常優渥的補助給 WTE 公司。WTE 的計畫有 50%以上的成本來自 MNES 的補助，至少每一個 MW 最多可以分到三千萬盧比。這是一個令人值得警覺的現象，所有 WTE 計畫的本質可能也是一種熱的形式，這些新的令人喜愛的技術，即便是在他們自己的陳述報告裡，也無法有效證明他們可以不製造污染。

MNES 在以前也認為堆肥是在印度這種國家脈絡下最好的 MSW 管理方式，而且焚燒的技術並無法同時兼顧廢棄物管理與能源再生的經濟效益。

好的廢棄物管理會以堆肥這種最永續的方式作為追求零廢棄物哲學(Zero-waste philosophy)的方式，而且已經有很多個人、志工團體、社區組織、政府機關、以及私人企業也在做堆肥。經由社區及個人的努力，發現成功的原因除了有社區的參與之外，還因為強調源頭分類(at-source segregation)、強調個人應付的責任、以及相對而言規模比較小的運作方式。由 Dr. R T Doshi 在努力推動施行城市農業概念(City farming concept)，在 Mumbai 有 RISE of Bangalore、Advanced

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Locality Management groupsi、Stree Mukti Sanghatana，在 Bangalore 有 CEE's initiatives，在 Chennai 有 Exnora International，在 Delhi 有 Vatavaran and ACCORD of Delhi 等幾個團體以社區參與的方式在實踐，有一些成功的去中心化的、合理的廢棄物管理方式之案例已經產生。由政府所擁有的 The Karnataka Compost Development Corporation 在 1976 年的時候開始以自治區的規模來實施堆肥，並且打算在未來仍持續這樣進行。The Excel Industries 正在印度提倡一種厭氧的堆肥方式，而且在 Andhra Pradesh、Mumbai、Ahmedabad、Rajasthan、Madhya Pradesh 這幾個地方有數個相同的計畫正在進行。The Excel Industries 在 Calcutta、Bhopal、Gwalior、Malad 和 Thane (both in Mumbai)、Trivandrum 和 Calicut (both in Kerala)已經建立自己的工廠。但是在 Trivandrum (Kerala)的工廠卻引起當地社區強烈的抗議，因為這間工廠污染了當地的水源與空氣。當地的地方政府希望這間工廠可以關廠停工。這是一個例子，即便是沒有分類的堆肥，如果以集中且大量規模的方式處理也一樣會對人體及環境產生危害。

在國家政策這層級上，環境及森林部(the Ministry of Environment and Forests)在 2000 年的時候已經針對都市廢棄物管理方式進行有關操作程序的立法。這個法律詳細地規範各地自治區在處理都市廢棄物時候應該遵循的手則。根據這個法律，焚化爐可能可以用在某些特定的案例上。要被焚化的廢棄物不可以經過任何的氯化處理，而那些含氯的塑膠物質也不可以焚燒。

然而，這個法律還是漏掉一些為了提升回收以及垃圾減量或是提供社區參與機會而應該要有的機制設計，儘管這個法律是由龐大民意壓力、NGOs 以及許多社區組織的努力所促成的。拾荒體系以及二手市場所進行的本土過程值得繼續瑣定 3Rs 為目標持續發展，儘管這個部分到目前為止仍然沒有受到法律的注意。

政府禁止以回收塑膠(recycled plastic)以及非法色素(non-permissible colour)來生產包裝食物的塑膠袋。即便是不到 20 微米厚的塑膠袋也在禁止之列。但這種規定卻反而會增加原生塑膠(virgin plastics)的使用量。雖然塑膠袋已經有 5%的成分是由 MSW 組成，但幾乎各地的政府還是受困於大量的塑膠袋，所以有許多政府打算要乾脆禁止塑膠袋的使用。

零廢棄物社會的概念，是一個我們已經開始在努力的目標，儘管這還是一個尚未實現的夢想。不過在印度有一些社區以及志工團體正在做這些事情以實踐這個夢想。零廢棄物 Kovalam(TheZero-Waste Kovalam)計畫由 Thanal 以及由綠色和平組織所支持的 GAIA 和 WNA 所負責，這是一個示範性質的計畫，有希望成為一個成功的實驗以及經驗。

生物--醫療廢棄物管理---概況介紹

在幾年以前，醫院的管理階層很少注意到在各地醫院、家庭看護、病理中心產生的醫療廢棄物的危害。這些廢棄物找出他們自己流動的方式，進入一般廢棄物的收集體系裡，從而可能污染全部的廢棄物。而且這批龐大的已被污染的廢棄物也可能在進入廢棄物管理體系之後或之前就已經先進入二手市場，而來危害人民的健康及生命。最近才比較有醫療廢棄物要安全處理的觀念。Srishti(一個基地在新德里的非政府組織)是第一個注意到這個事情的團體，很有責任感地在國內推動一些工作，希望可以有效改變國內處理生物—醫療廢棄物的方式。有許多以國家為目標的行動已經在推動，要迫使政府著手制定生物—醫療廢棄物管理和操作規定、制定技術規格、禁止燃燒氯製品。這些規定、規格、分類都可以幫助解決問題。不管這些限制最後制定成什麼樣子，都是一個有用的工具，可以強迫生物—醫療廢棄物在產生的源頭、接下來的處置過程都要完成分類。

由 Srishti 領軍的 NGOs 組織，負責推動更清淨、更安全的醫療廢棄物管理運動，已經成功地引進幾個關鍵的因素，像是將戴奧辛列為最優先的關心對象，而焚化爐也應該要小心控制。世界銀行對於醫療廢棄物焚化爐表示憂慮。目前，印度也有一些組織希望能夠從國家層級下手，來堆動一些有關於焚化爐廠址選擇的限制。

雖然已經有一些醫院努力在執行印度政府所規定的法律，但離政府的標準還有一段距離。有幾個國際組織願意提供援助，也在觀察印度政府未來要如何處理這個議題。亞洲開發銀行有提供基金給醫療廢棄物焚化爐，這在最近引起一連串的注意。

Srishti, Toxic link, MMAG and Thanal 最近針對 New Delhi, Chennai, Mumbai and Kerala 幾個地方進行調查研究。所有的報告都指出焚化爐對當地居民的健康以及環境的品質影響加劇。Thanal 曾經在台北所舉辦的 WNA 年會上報告過此事。在 1996 年期間，世界銀行要補助興建焚化爐的計畫在經過激烈的抗議之後停頓了。但事實是，印度政府還是留下很多空間給那些提倡興建焚化爐的人士。因此，那些願意提供興建焚化爐基金的機構，像是世界銀行，所扮演的角色值得注意。

有害廢棄物管理概況介紹

在 1997 年的時候，由 Supreme Court of India 主要成員舉辦了一場 The High Powered Committee，這場會議的結論是: 在這個國家裡有關有害廢棄物的狀況是很殘酷的，特別是這些廢棄物會影響地下水。而事候補救的工作是很困難，而且花費非常昂貴。不論是無辜的老百姓，或是工人，或是社區居民都要因為他人所造的罪惡受到傷害。

香港（中國）

“與時間競賽” — 迫切須要多樣的廢棄物管理方案

“規劃廢物處理看似並非當務之急，但問題實在已迫在眉睫。要是我們不盡快採取果斷行動，恐怕不消多久，香港的廢物便會堆積如山你我都要與垃圾為伴。”

（香港政府，香港環境保護 2001，p. 75）

簡介

以 1999 年為例，香港的堆填區每天處理超過 18,000 公噸，當中 9,300 公噸為都市固體廢棄物，另外 7,900 公噸則屬於建築拆建廢料。現時香港共有三個策略性堆填區，由 1993 年開始運作，經由七個地區性廢棄物轉運站提供。化學廢料則由一間化學廢物處理中心處理，其處理過程涉及高溫焚燒。至於在管制廢棄物進出口方面，香港已經在 1996 年全面禁止任何危險廢料進口，即使該物料會作循環再造。香港政府於 2000 年與中國大陸正式簽訂諒解備忘錄管制所有跨境廢料的進出口活動。

雖然政府近年不斷宣稱要保護環境、強調「減少廢物、回收再用/造」，可是政府卻沒有任何具體行動發展一套有效的系統，反而不斷向市民推銷大型堆填區及焚化爐的需要，顯示政府保護環境政策倒行逆施。

焚化廢棄物

現時在香港已經開展了一個垃圾焚化的「研究計劃」，由香港科技大學及大商家李家誠家族控制的長江基建集團附屬的青洲英坭有限公司合辦。此計劃被包裝成純粹的「科技研究」，說成是探討「由家居垃圾焚化轉為英坭原材料的可行性研究」。政府已於去年四月撥出九百萬港元支持該研究計劃，明確顯示政府對焚化爐的偏好。

此研究計劃將於 2002 年初開始一個為期四個月的測試，每日會焚燒 40 噸左右的家居廢棄物。若研究成功，該焚化爐可以每日處理 4,800 公噸的家居廢棄物，相等於香港固體廢棄物的一半。青洲英坭於一份文件中提到，系統將「採用旋轉爐對廢物作高溫處理」，該焚化爐「所產生的剩餘物會成為水泥半製成品及可再用於水泥製造過程中，同時也大大減少須要掩埋的剩餘物」。

此研究計劃又提到空氣污染控制措施，認為可以有效控制二噁英及其他污染物。

科技大學及青洲英坭公司現正向政府申請一個空氣排放的牌照，遞交申請後將有 30 天的公眾咨詢期。

另一方面，長江基建於 2000 年底建議興建一個人工島以處理都市固體廢棄物及建築拆建廢料。

政府對焚化的偏好

雖然政府近年在各有關環境及社會發展的文件中均不斷強調「可持續發展」，政府卻視焚化爐為唯一能解決廢棄物問題的方法。原因之一是政府不願意再撥出土地作堆填用途，因為用作堆填的土地不能為政府帶來利潤。另外就是政府根本不相信減廢回收是一個選擇，所以從未認真發展一套有效的廢物循環回收系統，別說是在財政上支持回收工業的發展。

政府一直為興建焚化爐的計劃辨護，誇大興建焚化爐及堆填區的迫切性，恐嚇公眾若問題不及時解決，「香港的廢物便會堆積如山，你我都要與垃圾為伴」。對沒有足夠資料的公眾來說，焚化爐是最快捷的解決方法。

反焚化運動

中國綠色和平已經在香港開展反焚化運動差不多兩年，又是唯一一個反焚化的綠色團體。住在焚化爐擬建地區的居民一直都非常積極參與反焚化運動。在五月尾綠色和平與居民團體合作組織了一次千人反焚化遊行。

要反焚化運動徹底成功，我們必須指出另類廢棄物處理的可行性及其對環境和社會的正面影響。中國綠色和平正在與美國的 Institute for Local Self-Reliance
合作撰寫一本「多樣性廢棄物處理研究報告」去支持反焚化運動。香港主要的問題就是 「垃圾收集」系統遠比廢棄物回收系統方便及有效。因此大部份市民都對「垃圾處理」系統不太了解。研究報告希望將"垃圾處理"系統的真面目公諸於世及建議有別於焚化及堆填的廢棄物處理方式。

另外，綠領聯盟成立於 2000 年 9 月，中國綠色和平也是一份子。綠領聯盟正協助三個勞工團體計劃推行地區回收網絡。

馬來西亞

檳城消費者協會

固體廢棄物的處理與焚化

目前,馬來西亞固體廢棄物的單位生產量是介於 0.45~1.44 公斤/日，視各地區的經濟狀況而定。一般而言，每單位生產量的比率大約 1 公斤/日。馬來西亞的固體廢棄物中含有很高成分的有機廢棄物，因此這些廢棄物都是高水分而密度又大(> 200 公斤/立方公尺)。根據最近在 Kuala Lumpar 所進行的研究顯示，住宅區之有機廢棄物的總量高達 62~72%。固體廢棄物的處理大部分都只利用掩埋的方式，在馬來西亞半島大約有 177 座處理場。在大部分的例子中，大約有 50%的掩埋場實行露天傾倒。

在第七次馬來西亞計畫(1995)中，聯邦政府已經耗資 2090 萬馬幣去建造 9 座衛生掩埋場，並且在 34 個地方政府對 27 作掩埋場加以升級。馬來西亞政府也花費了 1,700 萬購買 7 座容積為 5-20 噸/日的焚化爐，分別在各個休閒渡假島嶼，Langkawi, Labuan, Tioman 和 Pangkor。

馬來西亞政府正在制定一項關於固體廢棄物管理的新法律。主要認可的廢棄物整合性管理梯狀程序如下：廢棄物減量，重新使用，資源物質回收，能源回復，以及填土掩埋。馬來西亞的經濟計畫部門表示，關於廢棄物處理設施，如轉運站、熱熔廠，以及‘以廢生能’的新技術，將會在不久的將來變成一個固體廢棄物的替代處理方式。

馬來西亞在 2000 年 12 月 2 日再次發起回收運動，其目標是希望在 2020 年之前 2%的廢棄物可以被回收。堆肥技術仍被研究但已非主流。因為懼於土地的不足與高廢棄物製造率，政府當局計畫在中心區域興建焚化廠。三座焚化廠將被設置於 Kuala Lumpur, Selangor 和在 Pahang 的 Cameron Highlands。在吉隆坡的 Kampung Bohol 焚化爐，每日約可處理 50 噸的廢棄物，估計約需 12 億馬幣而由 JBIC (Japan Bank for International Cooperation)提供資金，但所需使用的特定技術則尚未確定。

另一項在吉隆坡的 Sentul 建設熱力氧化廠的提案則被取消，因為地點太接近住宅區，學校，以及商業區。此項提案的環境影響評估已經送交環境部備查。我們經請求對非環境相關事物、損益分析和社會影響評估等做一份更詳盡的研究。此計畫的提案者正在尋找更適合的地點。

馬來西亞的環境部正在深入查詢用於戴奧新辛抽樣的草案，而由於馬來西亞

至今仍沒有排放戴奧辛的標準，所以現正對此訂立新法。4 月 30 日時 Thermo Finnigan Corporation 亞洲區經理 Michael Khalil Harvey 對部門成員做了一項簡報，題目是”戴奧辛來源、去向、運送、取樣、結果之引用及解讀”。

醫療廢棄物的焚化

1995 年，當馬來西亞醫療廢棄物管理及醫院支持機構成為私人經營化時，地方的醫療廢棄物焚化爐隨著興建起來。目前已有 5 座地方性的醫療廢棄物焚化爐，容量為 20~50 公斤/每小時；還有三座容量為 200 公斤/每小時的焚化爐在計劃中，因為場地問題及地方上的抗爭而尚未興建。有七個小型就近醫療所的焚化爐，當中 5 座容量為 20 公斤/每小時，2 作為 50 公斤/每小時。

有害廢棄物的焚化

在內格里先目壁蘭省(Negri Sembilan)，離開吉隆坡(Kuala Lumpur)90 分鐘車程的地方，布吉那那斯(Bukit Nanas)，一座處理化學廢棄物的有害廢棄物處理廠已經開始營運。處理廠位於橡膠園的中間，距離主要道路很遠。

這一個處理廠在 1998 年 11 月開始營運，是仿丹麥一家位於 Kommunekemi, Nyborg 的有害廢棄物處理廠所建造的馬來西亞第一座處理廠。處理廠的頭家握有馬來西亞半島上處理有害廢棄物 15 年的契約，他投資了 7 千萬美元在處理廠。

當此處理廠在進行規劃時，馬來西亞政府對有害廢棄物立法。此法案經丹麥政府的協助，根據丹麥的立法來制定。處理廠從初期設計階段到實際開始運作，一直有丹麥私人資本的投入。丹麥透過 Danced 計劃對此場的啟動提供幫助。

這一家處理廠除了醫療與放射性廢棄物以外，接受其他所有種類的廢棄物。有機廢棄物在焚化爐燃燒；酸、鹼無機藥水經化學處理、中性化後，再去除有毒的鉻及氰化物；處理後的渣物與石灰及水泥捆在一起，然後傾倒在有兩層護被而掩埋，掩埋場有足夠空間可做廢棄物掩埋達 20 年之久。

在 1995-1999 的 5 年間，每年平均有 43 萬 1 千噸的廢棄物產生，主要從金屬處理、電子業、紡織業、化學及有關工業、農業及家庭活動等，也有醫院的廢棄物。到 2000 年底，亞蘭姆廠(Kualiti Alam)處理 1002 家公司的有毒、有害、廢棄物達 216,500 噸之多。

現在公司需要通知主管機關有關有害廢棄物是否必須收集、貯藏及處理；另外，公司付費用基於污染者付費的原則。

CAP 的行動

檳城消費者聯盟(CAP)發起了反對焚化處理及減少廢棄物的運動，我們向全國民眾收集連署，聲明我們反對各種類型的焚化爐，不管是醫療、固體廢棄物或有害事業廢棄物，要求政府尋求對環境安全，及更經濟的替代方法。我們也撰寫關於廢棄物、塑膠、EDCs、堆肥等方面的文章刊登，於我們所出版的報紙、小冊子上，來引起一般民眾對這些議題的覺悟。

我們的目的就是要減少廢棄物，經由立法來淘汰與禁止有害的家用產品、減量包裝、源頭廢棄物防治、重複使用、回收以及堆肥。

東埔寨

社會衛生、資源回收組織(CSARO)

目前廢棄物處理問題

東埔寨位於東南亞洲，目前該地域有一千兩百萬人口，這些人口裡有 15% 以上住在城市裡，依現有數據估計至少有 700 餘噸的廢棄物，每天在城市及大鄉鎮中衍生出來，2/3 的有紀錄的廢棄物是在首都金邊所衍生出來的。

在金邊外圍及少數省城，都將所衍生的廢棄物傾倒在城外空地，所提到的城鄉都有廢棄場，可是這些廢棄場沒有人在好好控管，經營也不善，形成對環境的破壞，而招致影響公眾的健康。

現在的困難在於固體廢棄物的處理，因缺乏有技術及有經驗的人員，而不能有效及妥善的管理與經營，也沒有恰當的器具來做低價的收集及運輸廢棄物，因收費不足而財源匱乏，也不能給工作人員報酬，鼓勵他們去有效率的工作。

其他種類的廢棄物（醫療上,工作上,有害/有毒），因為最近的工業發展，在容量上也開始逐漸增加，可是，因為政府沒有效率的立法，管制及執法，使得非法傾倒、亂倒的情況很猖獗。更糟糕的是，政府也沒有能力去做適當的、有效的監視廢棄物傾倒。

不久前，可做資源回收的物質，都被收管或使用及交換。但是，因消費的增加，使得廢棄物的量也跟著一直增加，而變成到處亂丟、亂倒。很不幸的是，因可做資源回收的市場規模縮小，廢棄物的亂丟、亂倒加劇。以前可以將廢棄物出口到鄰近國家做資源回收，現在都消失不見了，除非所出口的是價格極高的物品（鋁及其他被指定要選起來的金屬）。因此，更增加廢棄物隨意傾倒的現象。

突顯出來的廢棄物管理問題

東埔寨固體廢棄物部門突顯出的有關事情,就是最近 10 年來,廢棄物性質從生物可分解（紙袋、香蕉葉等），很快地轉換成生物不可分解的物品（主要為塑膠類物品）。

很不幸的，塑膠廢棄物擴散到國內各鄉鎮，即便是在偏遠地區也可見其蹤跡，各式各樣的塑膠用品變為持續性的環境污染物。因為工業化的緣故而增加的工業廢棄物量，這些廢棄物當中有一些成分是潛在性的有害物品。

廢棄物焚化問題

現在國內僅有的焚化爐為小量操作型，專門處理特定醫療院所的醫療及衛生上的廢棄物。

市公所的焚化爐，在目前並沒有特定計畫。幾年前金邊市政府與外國公司做了初步磋商，但幾乎沒有省錢的經營方法可循。到現在還沒有任何進步可提。

然而，許多外國廠商與政府接觸，如何在國內（主要是在海邊的施哈努村）建立焚化爐的運用。

他們的提案是從外國運入可焚化的廢棄物，因為國內的廢棄物大部分是含有很高的有機物而難燒，所以他們的提案真可說是了無新意。

在 1998 年底，當大量含汞的建築廢棄物委託輸近國內時，掀起對於環境污染的共識。此事可能引起幾家窮人在廢棄物堆中覓取時，死了一人，而多人病倒。經過警告後，政府尋求及獲得 WTO、UNDP 及許多外國人的捐助，在 1999 年 6 月的時候，該批有毒建築廢棄物終於運回原輸出國（台灣台塑公司）。在加拿大的 NGO 及國際環保組織也不贊同焚化爐的焚化處理方式。

泰國

東南亞綠色和平

目前浮現出的廢棄物處理問題
面積：512,993.65 平方公里
人口：64 萬 (1996 年 11 月)

固體廢棄物的產生：

固體廢棄物的量每年都在增加，尤其是難於處理的部分增加的更快，而非必須的消費比必須的消費產生更多的廢棄物。在 1997 年，全國有一千三百五十萬噸的固體廢棄物，其中 24%來自曼谷，35%來自其他都市，而 41%來自偏遠地區。

太目前的處理方式危大量的收集，然後集中處理。最近，政府要試辦"一貫的廢棄物處理系統"，如包括：分類、堆肥及焚燒。最近為因應增加的大量廢棄物，政府設立國家政策：(1) 改善固體廢棄物處理，經由私營化來消除廢棄物工作；(2) 支持及鼓勵廢棄物的分離；(3) 鼓勵回收及再利用；及(4) 支持地方政府建立廢棄物處理能力。

有害廢棄物的產生：

依污染管制部門的發表數據，1996 年有 1,634,104 噸工業廢棄物，預計到 2001 年就有 2,813,980 噸。當前工業廢棄物有少量在工廠或處理廠經過正確處理。僅有的處理廠每年可以處理 360,000 噸，其他的貯存到以後處理，有的就非法傾倒在公共地方，所以每年都有一百萬噸的工業廢棄物都無法處理。

在 1997 年，工業部雇了美國的 CM8 工程公司及 Rust 公司來分析及預估將來 10 年增加的工業廢棄物量。這個設計預計用於各省做建立工業廢棄物處理中心的設計。工業部注重有害廢棄物的焚燒，計劃在萬埔工業區建造容量為每年可焚燒 10,000-50,000 噸、花費 2 億 2 千萬泰銖的焚化爐。

醫療廢棄物的產生：

污染管制局、衛生局、曼谷都會行政部門都是管理醫療廢棄物的機構，各機構有獨立的功能。但是各機構對醫療廢棄物都有不同的詮釋，所以各機構存有差異，因此 BMA、DH 及 PCD 的廢棄物發生率分別為 0.11、0.43 及 0.65 公斤/床/日。在 1995 年衛生局(DH)舉辦了醫療廢棄物的焚化，而得到的產生數據為 0.23 公斤/床/日。

在泰國最盛行的處理方法就是焚化。現在曼谷行政單位 (BMA)走兩部容量為 10 噸/每日的焚化爐在運用。衛生部門(PH, MPH)有三種不同的容量為 25,50 及 100-150 公斤/每小時的焚化爐設計標準。全國有 750 座焚化爐設置在醫院，大部分的焚化爐都已經老化毀損，所以 DPH 開始進口焚化爐來取代毀損的焚化爐。

停止泰國境內焚化爐使用的起步：

- 1994 年窮人組織做反焚化運動。
- 1995 年綠色和平組織開始組織反焚化運動。
- 反焚化運動已經有成功的景象，日本銀行(JBIC)暫緩借錢買焚化爐。
- 反焚化運動沒有積極推行，需要與 NGO 組織多溝通。

促進非焚燒的代替方案運動：

- 許多市民團體在泰國舉辦各種運動，如：以廢棄物換蛋等。在曼谷舊友62,000人撿拾垃圾，貢獻很大。
- 很多非正式教育系統用在廢棄物處理的訓練。
- 在泰國資源回收及堆肥工作可以做。
- 在蘇拉塔尼省將發動基於社區的廢棄物處理運動。

越南

越南環保署標準與品質處

越南的固體廢棄物管理

在越南，環境污染已經造成特殊而且複雜的問題。今日都市固體廢棄物管理正因為快速的人口成長，都市化、工業化過程和城鄉移民等因素而變得欲來愈急迫，其不僅導致病患數目的增加，也產生改善疾病診斷和醫療品質的需求。

根據亞洲開發銀行(ADB)所贊助之有害事業廢棄物管理計畫(Estimation of Hazardous Waste Project)的評估結果，越南有害廢棄物的數量大約為280,000~640,000噸/年。

a. 主要的廢棄物管理議題

a.1 目前發生的與浮現的議題

a.1.1 衛生掩埋場的規劃與興建：目前，一些城市與省份在土地資金上具有許多困難，所以衛生掩埋場的規劃與興建應該再多加考量。

a.1.2 廢棄物的收集：越南目前廢棄物收集的比例大約為60~70%。

- 家庭和街道廢棄物由UrbanEnvironmentCompanies(URENCOs)所收集，其可收集大約60~85%此種類型的廢棄物，其餘的則被回收者所收集或被排放至湖泊、運河和池塘中。
- 事業廢棄物大部分是由事業機構本身在將廢棄物運送到都會掩埋場之前，做好收集與處理的工作。
- 在一些大城市和省份，如：HaNoi, Ho Chi Minh City, DaNang等地的醫療廢棄物則以契約的方式由URENCOs所收集和處理。其餘地方的廢棄物則由醫療機構本身來收集、運送與處理。
- 60~70%的排泄物/夜肥是由URENCOs所收集。其餘的則由郊區或一些公司以必要設備加以收集。

a.1.3 廢棄物處理

目前幾乎所有的廢棄物都是以掩埋的方式處理。由於前端(源頭)的分類沒有落實，醫療與有害廢棄物並未加以處理，而直接與家庭廢棄物一齊被傾倒於粗陋的露天傾倒地/掩埋場。僅有少量的廢棄物被回收，而且堆肥生產的量也不多。

醫療設施所產生的廢棄物有一些是以焚化的方式處理。在大城市，如：Hanoi 和 Ho Chi Minh，事業廢棄物會受到處理；而事業公司會將它們等待處理的有害事業廢棄物先貯存於各自的場所。

a.1.4 廢棄物收集與處理所應用之技術

目前越南擁有 826 間醫院，其中 29 間中央醫院，198 間省市醫院，551 間區域醫院和 48 間分院，共有 104,065 個床位。這些不同醫院所產生的廢棄物總量中，12~15%為需要特殊處理的有害廢棄物；然而，我們缺乏適當的處理設備。只有少部分的醫療機構擁有由科學科技環境部(Ministry of Science, Technology and Environment)對技術標準與氣體排放加以評估的焚化爐。越南欠缺能夠分析焚化爐所排放之戴奧辛濃度的設備。

b.廢棄物焚化之現況

b.1 焚化爐的類型

越南目前運轉中、興建中或計畫中的焚化爐主要是以處理醫療廢棄物為主(見圖表 1.)。

b.2 廢棄物管理公司及其技術之資料

在面對固體廢棄物處理，尤其是醫療廢棄物處理的緊急需求之下，一些國內的製造商已經力促越南政府提供他們生產執照。目前有 15 家在地的製造商已經獲准取得必需執照。越南政府剛剛發表了關於焚化爐的暫時條例，包含技術標準，評估方法與廢氣檢測。

b.3 廢棄物焚化爐計畫的經費

越南的製造商興建家庭廢棄物焚化爐，如: CAMAT-GX, RET 1, RET 20 以及 L§45。進口的焚化爐類型如：Hoval 正於一些醫院中運作。衛生部(The Ministry of Health) 想要為在地醫院進口另外 25 座焚化爐。

c.停止廢棄物焚化爐與發起‘非焚化’替代方案的行動

c.1 相關部門對於更佳固體廢棄物管理的堅定決心。執行單位的公信力是其成功之重要條件。

c.2 策略性的規劃，其為對有限的政府資源做更具經濟效益之使用的基本要素。

c.3 垃圾減量第一。源頭減量是21世紀固體廢棄物管理的重要法則。

c.4 收集設施的改善與節約成本。廢棄物的收集在固體廢棄物的管理中是最昂貴的過程；收集設施的改善與節約成本將能產生財源，而可用於維護一個衛生掩埋場。

c.5 將節省的費用用於最終處理的改善（謹慎的場址選擇與管理是成功的掩埋計畫之重要關鍵）。

團體介紹

大隘社

台 灣

「大隘文化生活圈協進社」(簡稱「大隘社」)於1997(民86)年二月二十三日於新竹縣北埔鄉正式成立。但它其實在1996(民85)年六月，即已略見雛型。

當時，主要是一些北埔在地人有感於自己子女的育幼問題，於是向北埔天主堂神父請教可否挪用一間空房，以便提供小孩學習、成長的環境。

獲得神父爽快的首肯，於是我們便有了一個空間做為「家」。之後，陸續有人主動把工廠或學校廢棄不用的辦公桌、櫃子等搬來；有人親自釘製書架；又有一些人把一箱箱的書籍雜誌放在門口，還有的人則志願做義工、擔任國畫、書法、插花等課程的老師。就這樣，一個小小的圖書館兼每週幾堂義務教學的教室，在一些鄉民的善意與熱忱下，開始活絡了起來，各式各樣的活動也一一展開…

到目前為止，「大隘社」的活動大體上可分成兩類，定期和不定期的：

一、定期的活動：

1. 義務教學課程：

每年分四期，每期平均十週，每週平均五天晚上皆有不同的義務課程，如：書法班、山歌班、文史班、童謠班、兒童輔導班等。老師和學員大多為本地人，大家相互分享不同的專業知識與技能。暑假也會另外為小朋友增班。義務課程已進行了三年。

2. 大隘社訊：

每二個月出版一期的「大隘社訊」迄今(2000,5)已達二十期，內容主要是針對客家或地方的事物做反省與回應，由地方人寫、地方人編，且免費贈閱給地方人看。

3. 資源回收—親子系列：

自1997(民86)年九月起，平均每月舉辦一次親子戶外活動，同時提倡環保觀念，引發資源回收行為。每次活動，由社員兩人一組輪流舉辦。到目前為止辦過的活動如：跳蚤市場、烤蕃薯／稻草人、二寮神木伯公健行、三對三鬥牛賽、寫／贈春聯、大隘繽紛（週年慶）、司馬庫斯之旅、達娜伊谷生態之旅等。

二、不定期的活動：

1. 舉辦推展客家文化並與其他文化交流的活動，如：「山狗大」客家音樂演

唱會、「客家八音之夜」、「下街端午情」音樂會等。

2. 保護地方生態、史跡的活動，如：保護秀巒山上因賀伯颱風傾倒的「情人樹」，保護小分林百年「雙安水橋」避免被野草侵損，進行大坪溪人文環境調查，成立「護溪隊」，宣導禁止毒魚、電魚，並開始進行大坪溪生態保育工作等。

3. 與其他社團合作的活動，如：向其他來訪社團介紹北埔／大隘及導覽、社團經驗的交流與分享，或合辦社區種耔營隊等。

另外，本社於 1998 年 10 月成立導覽組，為外地朋友介紹北埔的文史與自然景點。於 1998 年 12 月，受文建會委託，規劃北埔下街的造街案；2000 年則同時進行下街的重新規劃，大林橋的美化、活化，及新竹縣社區資源調查等計畫案。另外也在大坪溪畔成立生態教室，進行有機農業的實驗與推廣。

在 921 地震後，大隘社在台中縣石岡鄉成立「石岡仔工作站」，協助石岡災後重建，並促進北埔-石岡兩地鄉親的連結、交流與互助。大隘社三年多走下來，也算有了開花結果。但是我們仍然秉持著剛起步時樸實的精神，進一步為土地奉獻。

●**大隘社宗旨：**

一、促進北埔／大隘居民：

生活品質與精神生活的提昇。

客家文化的傳承與更新。

地方生態與地區產業的維護與發展。

青少年與成人教育的開展。

二、推動北埔／大隘地區有關客家族群、原住民族群的文化、歷史、社會、經濟、生態與建築等學術研究。

大安反焚化爐自救會

台灣

大安焚化爐預定位址於台中縣大安鄉南埔村，濱臨大甲溪出海口，設計焚燒容量為600噸/日，主係處理海線地區七鄉鎮之家庭廢棄物，與一般工業廢棄物。預估經費為新台幣25億元，採取BOT方式，20年期滿後，所有權歸政府所有。營運期間各參與鄉鎮必須提供保證之垃圾量，並依所代處理之垃圾噸位計費，故實際主要經費來源仍為各鄉鎮之家計單位。

大安焚化爐因其預定位址太靠近聚落，最近處相距不到10公尺，加上比利時之戴奧辛乳品事件爆發，更加深村民之恐懼。由縣政府主辦之參觀台北木柵焚化爐活動，亦無法消除當地居民之疑慮。

自救會有感於本村資源不足，雖有各界之資助，仍不足與政府部門作長期之抗爭，兵老師疲後將難以抗拒政府之行動；再者，遊行示威甚或激烈之流血事件，雖可引起媒體與大眾一時之注意，然若缺乏主題正當性，亦不足以撼動政府決策部門。故本會自始僅將遊行示威作為恐嚇行政官員之手段，未敢輕言實施。故主要之訴求對象為中央政府環保署、台中縣議會與大安鄉鄉民代表會，至於吸引媒體注意方面，由於媒體偏好血腥之生態，本會向持保留之態度。

為尋求環保署與地方議會之認同，本會採取與政府論「法」與論「政」方式同時進行。除透過鄉民代表會撤回本鄉參與大安焚化爐之承諾外，更多方搜集官方資料，證明官方對於垃圾量估計、交通運輸、或民意反應等之說法，均為毫無根據之謊言，從而證明大安焚化爐毫無必要。故本會尋求各級民意代表，對行政部門施加壓力，使本會之主張得以聲揚。

於本會抗爭過程中，資訊搜集充分係抗爭得以迅速成功之主要因素，充分之資訊除堅定村民抗爭之信心外，更使各級民意代表願意為本會伸張。

部分焚化爐之興建隱藏巨額之合法與不合法利益，不肖官員、商人與民意代表之勾結，形成一密不可分之共犯結構，利用公權力賺取非法暴利。利用公權力須尋求必要性與正當性，並獲民意之支持，然非法企圖之破綻亦從中顯現。

多數國人對反焚化爐運動仍抱質疑與鄙視，認反對者多係因焚化爐之地緣關係挺身而出，只要焚化爐不在我家，便事不關己。

一個值得村民信任之自救會，能與政府部門進行對話，避免掉入法律陷阱，豐沛之人脈，加上領導精英之團結合作均是本會得以成功之要件。

設定可達成之目標：

並非每一個焚化爐均可抗爭成功，但抗爭必須有所得。事先評估再擬定策略，設定可行性目標，方為成功之要件。

搜集必要之資訊：

大部分政府資訊雖屬公開，仍須費心搜尋；部分資訊則須借重民意代表之力量，才能獲得。加以研究後，才能針對政府企劃案提出批評。

提高環保意識，防範未然：

興建焚化爐係怠惰腐敗官員喜好之方式，不必費心推動垃圾分類減量，又可從中取利，遇有抗爭便可卸責。

故抗爭為最後手段，唯有提高環保意識，全民注意政府環保施政之方向，始能減少甚至禁絕焚化爐之興建。

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台 灣

「東南亞區域研究計畫」成立於1994年9月，是李遠哲教授就任中央研究院院長後所積極推動的一項大型整合研究計畫，目標在鼓勵與促進中研院人文暨社會科學研究同仁對該區域做全面的了解和深入的研究。

在開始的頭兩年，本計畫的主持人為張光直前副院長，副主持人兼執行祕書為社會所研究員蕭新煌教授。自1996年9月開始，蕭新煌教授繼任主持人。本計畫並設有諮詢委員會，目前由楊國樞院士擔任召集人。

壹、研究方向

本計畫在規劃之初，經由諮詢委員會的審議與討論後，決定了東南亞區域研究計畫的四個長程研究方向，它們分別是：

（一）東南亞的歷史與考古

（二）東南亞區域的語言、宗教、族群及本土文化

（三）脫離殖民統治後東南亞區域的政治、經濟、社會等各方面之發展

（四）東南亞華人與當地族群及社會的互動關係

貳、研究計畫（2001.1-2001.12）

基本上，東南亞區域研究計畫是經由審查程序評定後而獲得經費支持的各分支計畫所組成，這些分支計畫分屬上述四個研究方向，分別進行。本計畫亦支持博士後研究、博（碩）士生論文研究計畫。

（一）東南亞的歷史與考古

1.臧振華(史語所)
菲律賓呂宋島北海岸考古調查計畫

2.陳仲玉(史語所)
中泰古代海上交通史的研究

3.陳維鈞(史語所)
越南北部沿海地區考古調查

4.湯熙勇（社科所）
清代中國救助東南亞國家難船的方法

5.許文堂（近史所）

法國殖民時期的中越關係

6.李宇平（近史所）

集團經濟與東南亞新秩序：1930 年代上海、香港、新加坡之間商貿網絡的變化

7.蔡慧玉（台史所）

日本帝國「內外地行政一元化」下的印尼（1944-1945）：以「爪哇奉公會」為比較研究

（二）東南亞區域的語言、宗教、族群及本土文化

1.黃蘭翔（台史所）

麻六甲都市的文化多重性與其歷史的形成過程

（三）脫離殖民統治後東南亞區域的政治、經濟、社會等各方面之發展

1.黃登興（經濟所）

日本、台韓與東南亞的產業發展與貿易依存關係的比較研究

2.張靜貞（經濟所）

國際貿易秩序下台灣與東南亞的農產經貿關係

（四）東南亞華人與當地族群及社會的互動關係

1.朱浤源（近史所）

融合或衝突？馬華伊斯蘭近代發展初探

（五）博士後研究計畫

1.麥留芳：東南亞的馬來社會和伊斯蘭化

2.嚴智宏：素可泰時期的佛教美術

3.戚常卉：國家、宗族和新加坡金門人的國家認同

（六）合作計畫

1.龔宜君（淡江大學東南亞研究所）

王宏仁（淡江大學未來研究組）

張翰璧（義守大學公共政策與管理學系）

攜手並進的市場與國家力量：變遷中的東南亞台商勞資關係

2.游謙（慈濟大學宗教與文化研究所）

印尼「教士復興會」發展史

（七）博士生研究計畫

1.吳鯤魯（台大政治所）

亞洲金融中心的形成與變遷：日本、香港、新加坡金融中心政策的政經分析

2.呂秋遠（台大政治所）

東南亞金融危機的政治經濟學分析

（八）碩士生研究計畫

1.陳秋平（南華亞太所）

移民與馬來西亞佛教的發展（1786-1957）

2.蘇俊翔（政大外交所）
馬來西亞外資政策研究
3.鄭安貴（淡大東南亞所）
泰國經濟發展轉型之研究：以 1997 年金融危機之處理為例
4.張喬博（暨大東南亞所）
泰國民主化過程中非政府組織之角色－以草根性團體為個案研究
5.徐鴻馨（淡大東南亞所）
緬甸族群之研究－個案研究卡倫族分離活動歷程
6.李建柔（淡大東南亞所）
印尼分離主義形成與發展－西巴布亞與東帝汶之比較研究
7.李永傑（暨大東南亞所）
1990 年代馬來西亞華語本地創作歌手的主體構成

參、組織

1.計畫主持人：蕭新煌　教授
2.諮詢委員會
召集人：楊國樞 教授（本院院士）
委　員：王賡武 教授（本院院士）
李亦園 教授（本院院士）
楊汝萬 教授（香港中文大學香港亞太研究所所長）
翁松燃 教授（暨南國際大學公共行政系客座教授）
鄭赤琰 教授（香港嶺南大學族群與海外商業研究部主任）
蕭新煌 教授（本院社會所研究員）

3.通訊執行編輯/研究計畫協調：嚴智宏 博士
戚常卉 博士
4.行政/編輯助理：林淑慧 小姐
溫瑞芯 小姐
郭姿吟 小姐
5.圖書室助理：羅惠馨 小姐
陳明秀 小姐
6.資訊管理助理：梁開賢先生

肆、設備

本計畫目前設於本院民族所舊館二樓，有五間研究/行政室。訂有七份東南亞地區的報紙(*The Straits Times*、*New Straits Times*、*The Nation*、*The Jakarta Post*、南洋商報、西貢解放日報、信報)；蒐集陳列國內外東南亞研究機構之簡介。原有之圖書室之藏書置於民族/社會所圖書館，有西文圖書2450冊，中文圖書650冊和96種期刊。

伍、出版

（一）研究書目彙編

1.中央研究院東南亞研究書目彙編
蕭新煌、林淑慧　編　1995
2.中國南海地區考古學研究相關書目
陳仲玉　編　1996
3.東南亞之國際勞工移動：書目及摘要彙編
蔡青龍、金玫　編　1997
4.臺灣時報東南亞資料目錄(一九〇九－一九四五)
周婉窈、蔡宗憲　編　1997
5.中央研究院韓國研究書目彙編
蕭新煌、陳明秀 編　1998
6.中央研究院日本研究書目彙編
蕭新煌、陳明秀 編　1999
7.東南亞、日本、韓國研究博碩士論文彙編
蕭新煌、陳明秀 編　1999
8.當代中國大陸研究書目彙編
蕭新煌、陳明秀 編 2000

（二）專書

1.東南亞的變貌
蕭新煌 主編 2000

（三）通訊

本計畫每四個月發行「東南亞區域研究通訊」，已出刊十二期，第十三期將於2001年4月出版。

（四）東南亞研究論文系列

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6. 龔宜君：東南亞華人經濟成就與跨國商業網絡初探
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中國綠色和平

中國

綠色和平成立於1971年。30年來綠色和平一直關注世界各種主要的環境保護問題。在其中一些國際環保議題更是扮演關鍵角色：禁止輸出有毒物質到發展中國家；阻止商業性捕鯨；制訂一項聯合國公約，為世界漁業發展提供更好的環境；在南太平洋建立一個禁止捕鯨區；50年內禁止在南極洲開採礦物；禁止向海洋傾倒放射性物質，工業廢物和廢棄的採油設備；停止使用大型拖網捕魚；和全面禁止核子武器試驗－這是我們最早和永遠的目標。

中國綠色和平於1997年2月在香港正式成立，活動空間覆蓋大陸，香港，台灣和澳門。現正在全國範圍內展開監測環境問題的工作。和綠色和平在其它國家分部一樣，中國綠色和平完全獨立於任何政府，組織和個人的影響之外，並且嚴格不接受政府和公司的資助。綠色和平將繼續堅持在不侵犯個人和破壞產物的的原則下，和平而非暴力地推動環保及促進社會在這方面的改變。

(編註：中國的主權不及於台灣，台灣是個主權獨立的國家)

林內鄉重興村、烏塗村環保自救會

台 灣

重興村與烏塗村兩村比鄰位於雲林縣之最東北角，以台灣之母"濁水溪"為界，東臨南投縣竹山鎮，北接彰化縣二水鄉，是濁水溪與清水溪匯流處，古稱"龍門湧月"，依山傍水，代表全國性的水利陳列館簡於此，更有二、三百年歷史的水力發電廠，足於發展觀光及古蹟、教學等價值。純樸的溪畔居民大多以務農、畜牧為生，濁水米、紅寶石木瓜、林內絲瓜、雲頂茶享譽國內，是南、北都會區糧食與蔬果主要供應站。

眼光獨到的商人與政客負此三不管地帶，良知泯滅，不惜要犧牲全縣民生用淨水廠、灌溉、工業之水源取水區。嘉南大圳、卓幹線、八保二圳、六輕進水口各水系之水源頭的污染，屢次要在此設置事業廢棄物掩埋場、焚化爐，於此村長召開村民大會，成立重興村環保自救會。

烏塗村即以二年前著手推行資源回收，是雲林縣資源回收的示範站。兩村組織架構略同，設立會長、副會長、總幹事、文宣、會計的配制，致力於保護環境，永續家園，免於生命受傷害，以及提升社區教育與學習的互動，組成環保義工隊，推動資源回收，歷經反煌頌廢棄廠，景昕廢棄物以及自前由縣政府霸王硬上弓、替達和焚化廠(台泥)護航儘速通過審查、日處理量600噸的全縣垃圾案，讓大家感到錯愕。在雲林縣周邊成三角形的六輕、溪洲、鹿草三個廠已營運中。在全省現有的焚化廠已垃圾量不足、財政困難的情況下，雲林縣並無興建焚化廠的必要性，更做不好資源再利用。

專家大膽預測，如果焚化廠興建在林內，林內鄉地形封閉，地震甲級區，地質沖積層。營運後，2~3 年蔬菜出現斑點，十年以後山頭枯掉，林內應群鄉遷村；更無政治人物伸援手，反對設置地點的不恰當；縣政府一意孤行，在補助經費來源的中央再不檢討、濫用人民血汗錢，還要弱勢族群付出高社會成本抗爭，豈不棄百姓生死不顧，莫非百姓永遠是最可憐的，還要生活於恐懼中。

社團法人看守台灣協會

台 灣

1998 年一群關心台灣的朋友相約於台北成立「看守台灣協會」，從事以永續台灣為目標的環境和生態之調查，與各項公共政策之研究分析，並結合及喚起社會各階層人士一起來看守台灣的環境和生態。

「看守台灣」沒有很大的抱負，也沒有偉大的企圖心，我們想做的是記錄我們的作為及我們生活環境的點點滴滴，讓我們有一點點的時間來觀察環境對我們的行為所產生的反應；進而想一想我們要如何在台灣這塊土地上讓世世代代可以生活得安樂及尊嚴。張國龍教授說的很清楚「相信地球村的每一位公民都不忍心讓自己賴以為生的大地繼續遭受蹂躪，更不願意看到人類有一天也成為瀕臨絕滅的物種。要防止生態環境的繼續惡化，讓我們的子孫可以與大地共生、與大自然和諧相處，不能只依靠官方樣版的活動，更不能只寄望少數環保人士單薄的力量。每一位地球村的公民都要成為保護生態環境的行動者和參與者」。

自 1998 年底開始出版『看守台灣』季刊，探討台灣與全球的環境變遷，以及對生態與人類健康的影響。至今（2001.7）已出刊了 11 期，函括了海洋世紀、國土規劃、綠色交通、森林文化、城鄉發展、大地之怒、水土資源、能源革命、生態主張、全球化、廢棄物處理、以及清潔生產。在 2000 年 6 月，嘗試檢討過去一年對台灣衝擊及影響較大的政策與施政，出版『2000 台灣現況』檢視台灣在土地資源運用、能源使用、產業發展、環境規劃、廢棄物問題、以及「環境台灣」的社會化歷程；期望藉由檢討與建議，對社會與施政朝向「永續台灣」有所助益。

為提供國人更充分的環境資訊，特引介國際知名的環境智庫看守世界研究中心（The Worldwatch Institute）所出版的調查研究報告『看守世界專論』（*Worldwatch Papers*），自 1998 年起，計翻譯出版了 13 冊：『水之不存，人將焉附－淡水生態系的警訊』（*Imperiled Water, Impoverished Future*）、『自食惡果－環境及社會的亂象如何觸發疾病』（*Infecting Ourselves*）、『天氣新希望－穩定全球大氣的新策略』（*Climate of Hope*）、『縮減中的田地－世界八十億人的耕地損耗』（*Shrinking Fields*）、『被瓜分的水資源－糧食安全、生態系的健康及新匱乏政治學』（*Dividing the Water*）、『自作自受－補貼、政治、與環境』（*Paying the Piper*）、『土地的守護神－原住民與地球的健康』（*Guardians of the Land*）、『參與行動－人類與世界森林的新關係』（*Taking a Stand*）、『生活網線的遺失－脊椎動物的衰減漢生物龐雜度的保育』（*Losing Strands in the Web of Life*）、『搖盪的漁船－漁業保育和工作保障』（*Rocking the Boat*）、『回到正軌－全球鐵路運輸之復甦』（*Back on Track*）、『被遺棄的海洋－力挽衰敗的海洋』（*Abandoned Seas*）、及『淨損失－水產、工作機會和海洋環境』（*Net Loss*）。

今年（2001）籌畫翻譯出版『2001 世界現況』（*State of the World 2001*）。該書是世界著名的環境智庫看守世界研究中心的旗艦作品，從 1984 年起歷經二十個年頭，每年該中心傑出的研究團隊以跨領域的視野來觀察和分析全球過去一年裡的「環境與發展」議題，用簡明易懂的語文來撰述，並以 30 種語文在全世界出版發行，到目前為止已賣出了一百多萬冊，成為世界各國產、官、學、研各界重要的參考文獻，對各國政策的制定和觀念的型塑影響巨大且深遠。該書的中文版在許多人的努力下，於今年的 6 月底與國人見面了。目前，我們再次投入翻譯看守世界研究中心的另一本重量級作品『2001 生命徵象』（*Vital Signs 2001*）。這本獲聯合國環境規劃署(UNEP)和強森基金會(W. Alton Jones Foundation)支持而完成的『生命徵象』十週年紀念版，闡明迎合滿足貪得無饜之消費需求的經濟，如何對人類、環境和經濟的健康造成負面的影響。更依賴汽車不僅使地球暖化，還導致更加不運動的生活方式；這種生活方式是肥胖症的主因。為治療第一世界的疾病而投入開發高獲利的藥物，造成針對像瘧疾等影響全球更多人口的疫苗和醫藥等重要研發經費受到排擠。產業化畜牧實務已經引起最為可怕的人畜交叉傳染，像牛的傳染病或稱為「狂牛」症者。我們這個新世紀所面臨的挑戰是延伸過去 50 年來的經濟成就，而又能制止生態衰退。『2001 生命徵象』中簡明扼要的統計資料，有助國人了解問題的真相和找出因應的對策。『2001 生命徵象』中文版預計在今年 9 月底前出版。

為因應國內環境繼續的惡化及生態持續劣化，提高民眾對環境污染的警覺及環境保護的意識，我們舉辦及參與各種社區集會、學校講座或學術研討會，提倡民眾自主的廢棄物管理實務。我們特別重視焚化爐污染的議題，在 1999 年 7 月和美國基要資訊中心合作邀請著名的反焚化爐專家紐約聖勞倫斯大學化學系教授柯保羅博士（Dr. Paul Connett）來台巡迴在台北、高雄、台南、台中、新竹、桃園等地舉行 13 場的演講和座談會，喚起民眾對焚化爐污染的意識和警覺，對官方漫無限制的擴建各式大、小型焚化爐的政策提出反對的意見。同時大力提倡廢棄物處理的替代方案，從民眾的認知、資訊和行為轉化，從事垃圾減量、資源回收、有機堆肥化等各種環境友善的垃圾管理方案，朝向零垃圾的永續社會邁進。雖然前途荊棘滿佈，尤其是官方短視的政策及無視民意的施政，但是身為台灣人沒有悲觀的權利，我們仍有很長的路要走。

您的關心、支持與行動，就是我們的的目標。

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美化環境基金會

台 灣

美化環境基金會成立在 1987 年，董事長為現任台中技術學院的阮大年校長，成立初期主要以汽水公會之主要會員捐款設立，如遠紡、泛亞聚脂、金車、黑松、可口可樂公司及其他飲料商。

基金會主要任務係以環保教育為主軸及配合政府推行環保政行，以非營利公益組織(NPO)形態，承接政府委託或民間捐助，積極投入環保教育與宣導工作。另也以非政府組織角色(NGO)監督政府執行環保業務與績效，並擔任社會大眾與政府之間溝通橋樑。

基金會的願景是：我們只有一個地球，付出一點關懷，尊重生命，將使我們的家園更美好。每一個人均能快快樂樂、平平安安，享受大自然，並使之可持續地生活下去。美化環境基金會未來除持續一般性之環保教育與宣導活動外，將積極推動建立具參與體驗與互動式的環境教育資源中心，並將執行之工作轉為企劃及顧問諮詢，也擬走入國際，加強與其他組織之交流。

基金會宗旨	1. 環境保護政策的推動。 2. 環境污染防治宣導。 3. 環境品質的提昇。 4. 促進環境美化推展。
專長\與特色	1. 辦理環境教育宣導活動。 2. 資源回收再利用示範宣導。 3. 辦理環保園遊會攤位設計。 4. 結合科技教育技術，發展環境教育。 5. 走入社區辦理環保生活體驗及環保研習活動。
基金會對環保工作的信念與堅持	1. 以創意之發想整合科技教育與環保工作。 2. 以服務熱誠整合各部門之資源。 3. 以關懷之心帶動全民愛人、惜物、惜福、與珍愛地球。 4. 以行動實踐環保工作。

美濃愛鄉協進會

台 灣

<美濃之所以美濃>

美濃作為一個社會文化地域乃由族群關係、產業經濟及地理特徵合塑出的隔離與獨立狀態所標定。地理上，東北／西南走向的美濃山脈與北／南走向的茶頂山脈夾集美濃平原而與東、北及西面的原、客、閩聚落隔離，平原南端又有寬廣的荖濃溪橫貫而與屏東平原上的六堆客家聚落分別。族群關係上，美濃與西鄰的河洛旗山及東鄰的原住民六龜有著歷史上的扞格，美濃客家人的社會關係擴展因而受到箝制。復以經濟上，自日據時代末期公賣制度管束與保護的菸草產業由於美濃平原上的氣候、土壤、水利及勞動力等必要條件的配合，逐次擴展而成為本島首要產區。公賣局契約所欽定的菸業生產關係使得美濃的經濟有相對於商品價格波動的穩定性，且使得美濃的農民在生產資料的取得及生產過程的組織上有相對於美濃以外社會的獨立性。

四十餘年來，美濃就在上述條件的作用下蘊育了她社會文化的強烈主體性與自主性。但自一九八〇年代初以來，菸草經濟的大幅衰退突破了美濃的封閉與獨立；美濃經濟必須仰賴外部市場經濟的成份與程度愈漸顯著，同時她的社會文化再生產也愈漸受到都市商業文明的滲透與制約。在這一幅場景下，語言、建築、社會關係等傳統文化質素或是流失或是質變，成為社區有識之士的共通隱憂。

<新地方意識的形成>

一九九一年，經濟部水資會有意在美濃黃蝶翠谷興建水庫的消息以謠言的形式傳出，引發了許多地方人士的惶恐與疑惑。同時間一群具有社會科學知識背景與社會運動組織經驗的鎮籍年輕人藉學術研究之便回到美濃，他們將關於美濃的社會人類學知識透過文化活動、講座及報紙專欄回饋給家鄉，使地方人可以站在較客觀抽離的立場觀照自身而不陷入制約性的社會關係漩渦中。他們並邀請各大學的客家社學生參與田野調查及活動策劃。此一工作團隊命名為「第七小組工作站」，以草根文化工作自我定位。

九一年冬，第七小組工作站聯合地方政府、社團、學者及環保人士邀請水資會官員舉辦「美濃水庫公聽會」。是會中，水庫設計的失誤、水庫本身可能產生的各種危害及規劃過程中反民主的官僚作風被提出討論與批判，並藉以形成美濃反水庫運動以及日後社區營造的社會意識濫觴。

<美濃愛鄉協進會的實踐方法論>

公聽會後，以第七小組工作站擔任主要的組織工作，結合在地農民、返鄉青年、士紳、藝術家、教師、各黨派政治人物及友好民間團體的「美濃愛鄉協進會」正式立案成立，標誌著社區營造新的切入方法與可能。一方面，美濃愛鄉協進會扮演中介者的角色，將進步的水資源經營理念，透過專題演講、社區說明會及文字論述的方式，傳送給地方民眾，使其了解反水庫運動並非基於「寧彼」的自私

心理，而是基於台灣水資源永續利用的宏觀視野。二方面，以社會科學的研究作為基礎，美濃愛鄉協進會致力闡述美濃客家文化的構成質素，及其形成的歷史與社會過程。三方面，以新的社會認同與人際關係連結原則為媒介，美濃愛鄉協進會不僅促成美濃公眾論壇之形成，且善用後續組織工作，使新形成的共識與集結的社會關係能用以解決壓迫眾人之事。

美濃水庫計劃自民國八十一年十一月核定以來，由於其對生態、高屏溪水資源永續利用及美濃客家社會文化的鉅大危害與威脅，受到美濃民眾、全國社區組織、鎮公所及代表會、全國與國際生態保育團體、學界、及各級民意代表的聯合反對，其工程預算連續四年遭到立法委員的仗義刪除。雖然運動成果輝煌，但參與其中的美濃各界人士清楚地知道，反水庫充其量只是拒絕了一場巨大的變易，而美濃面臨的許多困境與危機，如農業衰頹、社會解體、環境惡化及文化淪喪等等，並不會因為反水庫運動的成功而自動消解，除非地方內部能產生一股改造的組織性集體動力。

＜新舊互滲的文化發展＞

美濃愛鄉協進會的社區營造路線兼顧傳統文化的保存與研究，及新文化質素的創造。美濃愛鄉協進會已完成老照片的搜集整理，三級古蹟敬字亭與原型土地公——里社真官的保存，六堆客家建築普查，美濃鎮誌的編輯，福安國小新建校舍及美濃客家文物館的規劃工作，目前正進行永安路聚落的人類學研究。以客家文化的研究、調查與討論為策略，不僅使固有文化的整理與保存成為可能，且可創造出新的文化內涵。後者展現為福安國小新建校舍及美濃客家文物館的建築風格上；它們不僅呈現出現代建築設計與美濃傳統建築質素（菸樓與夥房三合院）的有機呼應，其落實的社會過程亦充滿廣泛而深刻的社區參與。甚者，客家文物館的展示與營運規劃結合專業者與社區居民，未來可望成為美濃文化發展的前進動力。

除了文化實踐，美濃愛鄉協進會更與在地的生態團體——八色鳥協會合作推動美濃的生態保育與教育宣導。目前進行的「黃蝶翠谷熱帶母樹林的資源保護計劃」，將建立一批以地方年輕人為主的解說義工隊伍，並充實林區內的解說系統。藉由參與面的擴大，希望能使生態保育的工作在地化與社區化。

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綠色公民行動聯盟

台 灣

綠色公民行動聯盟的前身為『台灣環境保護聯盟台北分會』，在經營各樣議題與地方組織合作的經驗中，我們深刻的體會到，不能單純從環境觀點看環境破壞問題，而忽視結構性因素。為了擴大我們對台灣環境運動的行動理念，在1999年12月會員大會提案通過了我們的新名稱與組織型態，我們同時試著將議題結盟、社區串聯作為努力的方向與目標。

經歷民主轉型後的台灣社會，面對政府的作為和企業利潤至上的動機，人民所生活的環境和自然生態仍然受到很大的破壞。因此，我們堅持：人民學習透過現代社會的合法抵抗形式來保護自身的環境權益，一同打造人民的永續社會。

目前綠色公民行動聯盟的主要工作以反核、能源政策以及推動完整的垃圾政策這兩項議題為主。我們將不斷地深化這兩項議題的內容，並把觸角逐漸延伸到台灣其他縣市。

因此在未來，我們將持續努力的議題包括：一、終結核電廠，建立非核家園：結合能源政策與反對核四計畫，提出廢除所有核電廠的時程表，並持續監督政府電力政策，推動無悔、永續及符合環境正義的替代方案，繼續與核一二三及核廢地區要求透明互信的監督機制、早日除役的非核家園；以及與抗爭終結的漁村貢寮，在一同面對WTO的衝擊下，建立居民參與的永續漁業、觀光願景。二、完整垃圾處理政策：籌組焚化爐監督聯盟，並且協助推動垃圾政策翻轉---從大焚化爐、大掩埋場的末端處理，往「零垃圾」管理政策前進，落實源頭垃圾減量及資源與廚餘完全回收等垃圾處理的配套機制。參與各地社區大學的社團參與課程，協助各地居民建立對環境保護行動的認識和實踐方式。

在未來，我們的經營方向為：議題結盟、社區串連、公民行動、永續社會。同時，我們也將更致力於拓展國際連結，透過跨國界的資源分享，讓居於弱勢的我們能夠產生更大的實力。

我們歡迎下列的方式支持我們團體的營運：一、認養綠盟：每個月固定捐款，額度為500、1000、2000。認養人除了享有會員的所有福利外，每年則分上下半年度舉辦認養人聯誼會，報告推動成效及聯誼。另外認養人將會收到綠色公民行動聯盟之會訊及期刊，和其他紀念物，定期告知綠盟訊息及活動，並於年度刊物登出認養人之大名以資感謝。二、加入會員：入會費500元，年費1200元，學生半價優待。會員有發言權、表決權、選舉權、被選舉權與罷免權，並得參與各工作委員會以及參加、推展會務和繳納會費、遵守本會章程及決議之義務。也歡迎小額捐款，或是購買我們的出版品或義賣品。

我們在這裡！

- 會址：台北市和平西路三段302巷3弄20號
- 電話：886-2-23041950、23042011
- 傳真：886-2-23061251
- 郵局劃撥帳號：**19502362** 戶名：台灣綠色公民行動聯盟協會
- **E-mail**：teputc@tpts1.seed.net.tw
- BBS站：bbs.nsysu.edu.tw 的 teputc 版
- 網址： http://www.teputc.org.tw/

東南亞綠色和平組織

任務：”護衛環境權，公開並遏止環境犯罪，提昇清潔發展”。

東南亞綠色和平組織立誓透過富創造性而非暴力性的具體行動達成我們的任務。

東南亞綠色和平組織反焚化運動的目標為：

以突顯外商公司產生的污染餘毒及強調國際援助、財政與開發機構在增加污染性產品及技術上的角色等方式，阻止大氣污染率高的工業和技術，如焚化爐，在此區域遷移及擴張。

將毒性物質污染在政經議程中列為優先考量，並保障針對排除釋放至環境中之持久性毒物與毒質及預防污染所制定之全國性及地區性的政治決議及法規能徹底施行。

確保採用並執行無污染的生產策略，並針對在此區域中破壞主要工業污染防治模式的生產方法以符合生態學之替換途徑取代，佐以由推論所得之促進對廢棄物處理及銷毀的非焚化的途徑。

“清淨亞洲”是全亞洲行動者的中心，而亞洲的蓋亞(GAIA)模式則在達成這些目標上扮演決定性的角色。

綠色陣線協會
台 灣

創立於 1997 年 6 月

綠色陣線協會是啥米碗糕？

　　綠色陣線協會是由一群對環境運動有熱情與想法的年輕人組成，我們希望經由對環境問題的深入研究與地方環保事務的積極參與，督促各級政府推動與落實環境政策，並積極推動環境教育，形成綠色的進步力量，以實踐「思考全球化、行動在地化」的理念。

綠色陣線協會的四個堅持

草根的
我們主張積極參與地方環保工作，發展地方草根組織，紮實地方環境運動的草根基礎。

專業的
我們主張培養民間環境問題的專業研究能力，積極推廣環保知識，以提昇整體的環境意識。

運動的
我們主張伸張環境正義，以實際的行動，宣傳環境意識，擴大參與層面，發展綠色力量，建立美麗家園。

進步的
我們主張站在全球的視野、弱勢的觀點，不斷地反省與批判，並連結其他的進步力量，進行社會改造。

綠色陣線協會想做些啥？

政策研究與批判
一、 有害事業廢棄物處理
二、 能源政策及電業法
三、 垃圾費徵收方式及資源回收體系
四、 山坡地保育
五、 農業相關政策
六、 環境荷爾蒙物質
七、 綠色消費、投資與企業

組織拓展
一、 讀書討論會

二、 會員聯誼旅遊及參觀活動
三、 學生營隊

專案研究
一、 台北市社區規劃師
二、 九二一地震災區草根組織發展
三、 農業產銷調查推動
四、 禽畜糞有機堆肥推廣調查
五、 海岸問題與親水指數

加入綠色陣線協會的 N 種方法
只要妳/你認同本會的想法、做法，均可成為綠色陣線協會的一員，並可依妳/你的狀況與需要，選擇參與的方式。
方法一：
如果妳/你對國家大事還是貓狗小事有興趣，並願意和大家讀書討論，可參加兩週一次的讀書小組。討論內容分為環保議題及時事討論兩大部份。
方法二：
如果妳/你熱愛青山綠水、蟲魚鳥獸，屬於「不安於室」的族群，可參加我們的會員聯誼旅遊活動。
方法三：
不論是本會目前在推動的專案、議題，或是妳/你覺得可嘗試推動討論的專案、議題都隨時歡迎你/妳進來參與，或把它們帶進來討論。
方法四：
如果妳/你實在無法參加任何活動，那麼依然歡迎你/妳給予我們精神上以及經費上的支持。
方法 N：
當然，也歡迎你/妳，來這裡瞧瞧，聊聊。
請加入環境運動的行列，
用妳/你我的雙手，
妳/你我的智慧，
與妳/你我的力量，
捍衛台灣環境！

綠色陣線協會
106 台北市信義路 3 段 147 巷 36 弄 22 號
電話：(02) 27080961
傳真：(02) 27080962
E-mail：gff@gff.org.tw
http://www.gff.org.tw
郵政帳號：19102160
中華民國綠色陣線協會

環保聯盟 SCOPE

巴基斯坦-

環保聯盟為非營利及非官方的組織，其成立於 1988 年，經聯合國經濟與社會委員會(United Nations Economics and Social Council<UNOSOC>)及其所屬團體認可。聯盟在過去是地區的焦點組織，現在更是國家的焦點組織，它也是環境聯絡世界中心(Environmental Liaison Centre International<ELCI>)及環境法世界聯盟(Environmental Law Alliance Worldwide<E-Law>)的會員之一。

使命：

從對地方、國家與全球層次的環境保護，去實行 21 世紀全球環境議程中的某些規定，以他們的實質精神透過網絡連結、鼓勵提倡、能力培養、研究、社區組織以及法律行動來達成自給自足的永續發展。SCOPE 將透過非政治、非宗教、非種族、非族群、民主的、透明的、自動的精神來達到其使命。

環保的主張：

SCOPE 可謂非官方的先鋒組織，以法律主張及行動最為有效的工具，為巴基斯坦的環境做保護。SCOPE 透過其主張及大眾所有興趣的法律途徑來扮演保護環境與物種的角色。在這裡值得一提的成功事例是，SCOPE 成功的達成對吉他爾國家公園法律地位的保護，以及成功的經由法律訴訟來阻止獵殺毫巴拉鳥類，以及成功的對發生在哈雷吉野生動物避難區捕魚執照的訴訟。

目前，在巴基斯坦境內沒有一處能做醫院及醫療場所廢棄物處理。雖然已經有一些不錯的基礎工作及改進企圖，情形仍不佳，對醫療人員，市公所公務人員吉一般老百姓都構成健康上的威脅。

大部分的醫療行政人員都注重於設置”棄置”的技術，如焚化爐，而不在意醫院內的實際廢棄物處理。廣泛的醫療廢棄物處理之道在於建立廢棄物的分類、消毒並透過醫院成員與醫療人員共同合作的處理。此解決方法會受到院方的抵制，因為有關人員認為問題並不嚴重，或太難於執行。因此，關鍵及在於要有適度的輔導及自發性的意願來管理醫療廢棄物的責任制。

對於此點，SCOPE 當然也是對於認定與引起傳染性廢棄物的丟棄議題之發起人。在 1993 年，SCOPE 發起巴基斯坦醫院廢棄物處理的研究，並在喀拉茲對此問題的嚴重度做調查。結果，在這 40 所公私立醫院、診所、診療局及實驗室都有相同的問題，如不當的廢棄物處理與移動，院方行政的忽略，政府的忽視及缺乏對廢棄物的認知。

針對這些問題，SCOPE 對醫院的行政你動了一些策略，但成效不彰。此後，對於這些問題，SCOPE 便提倡要緊盯政府有關單位制定法律及規範，以做到安全

的廢棄物處理。

如今，SCOPE 的努力有了成果。政府的衛生、環保等單位與醫院都提出對醫療廢棄物正面的反應。衛生部門與世界衛生組織(WHO)開始為醫院工作人員、行政官員、市府人員及有關部門的人員進行一連串的廢棄物處理訓練，並試著找出取代焚化爐的方法。

豐島網絡
捍衛環境與健康
日本

此網路於 1997 年建立，當時政府對外宣佈將新建焚化爐的計劃。我們反對此項計劃，因為我們相信"3R"——減量、再使用、資源回收（Reduce, Reuse, Recycle）是比建焚化爐更好的方法。

1,200 名公民已經向東京環境爭議協調委員會請願，同時有 60 位民眾已經於東京地方法庭展開了司法程序。以下是我們反對此提案的原因：

第一. 興建焚化爐是非必要的，因為現存的燃燒廢棄物的設施已經非常充足。

第二. 焚化的過程並不安全。

第三. 如果我們將可用資源燃燒，而它們是非再生性的——也就是會永久消失。

第四. 燃燒過程所釋放的戴奧辛及灰燼是會污染我們呼吸空氣的毒素。

第五. 這項計劃本身並非經由民主程序被公眾認可。

在過去的兩年半以來已經召開了 22 次公眾會議。與會委員對所有感興趣的單位團體陳述了各種建議，並將建議的年排放量加以介紹。然而，另一方面豐島區焚化爐計劃卻仍在進行中。

我們將監測這些排放量並計劃將調查所得公開。

在書背的左下角是豐島區焚化爐的照片。其煙囪高達 210 公尺，是世界上最大的焚化爐之一。

我們最關心的是政府計劃於焚化爐中燃燒工業廢棄物，其中包含了燃燒拆除房屋所產生的木材。這些木材中包含了對付白蟻的殺蟲劑，燃燒時將排放極大量的有毒煙霧於大氣中。

附　　錄

各地關心焚化爐團體聯絡名單

團體名稱	聯絡人	聯絡方式	備註
綠色公民行動聯盟	陳建志召集人	02-23041950 fax:02-23061251 teputc@tpts1.seed.net.tw	全台
看守台灣研究中心	鄭益明執行長	02-23898183 fax:02-23899036 twwatch@ms31.hinet.net	全台
文山新願景促進會	林淑英理事長	02-22362564 fax:02-22362361 selin@pchome.com.tw	北市文山區
自然環境保護基金會	劉淑惠理事長	03-9332255 fax:03-9359152 G6438@ms26.hinet.net	宜蘭縣
桃園縣環境保護協會	鄭總幹事	03-3351060 fax:03-3338497 handison@ms27.hinet.net	桃園縣
桃園反北區焚化爐自救會	廖華興里長	03-3683155 fax:03-3683155(大安里長)	桃園縣八德市
新竹公害防治協會	鍾淑姬理事長	03-5263029 fax:03-5616937 scchung@ms7.hinet.net	新竹市
新竹縣泰雅爾族部落永續發展協會	彭玉梅總幹事	03-5958440 pagung2@ms61.hinet.net	新竹縣尖石鄉
新竹縣五峰鄉桃山社區發展協會	麗依京.尤瑪總幹事	03-5856506 fax:03-5856505	新竹縣五峰鄉
苗栗縣竹南反焚化爐自救會	林文炳聯絡人	0921-320945 lehi1999@ms39.hinet.net	苗栗縣
台中縣大安反焚化爐自救會	蕭鶴賢	0935-063658 hhsiao@crc.com.tw	台中縣大安鄉
台中縣豐原市環保家園	鄭偉明	Fax:04-25281653	台中縣豐

發展協會		a5281652@ms15.hinet.net	原醫院
台中市新環境促進協會	陳伽榮總幹事	04-23013433 0930607345	台中市
福爾摩沙新世紀基金會	陳炳煌教授	04-3590121-3268 fax：04-3594276 phchen@mail.thu.edu.tw	中台灣
綠色主張工作室	粘錫麟召集人	04-7782980 fax:7743998 niegp@ms56.hinet.net	彰化縣
彰化縣環保聯盟	林世賢總幹事	04-7634085 fax:04-7630532	彰化縣
彰化縣公害防治協會	陳景祥監事	04-7767311 fax:04-7767310	彰化縣
南投草屯愛鄉自救會	林福彬	0935038617 a560673@ms49.hinet.net	南投草屯
雲林縣社區希望聯盟協進會	劉詮芝理事長	05-5511990 fax:05-5512009 baumeister@pchome.com.tw	雲林縣
麥寮環保文教協會	吳松霖總幹事	05-6938471 0937797070	雲林縣
雲林縣林內鄉 重興環保自救會	張景洲會長	05-5897213 fax:05-5892646	雲林縣
雲林縣林內鄉 烏塗環保自救會	張翠屏會長	05-5893634 fax:5892062	雲林縣
洪雅書房	余國信房主	05-2280475 fax:05-2280479 hoanya@ms41.hinet.net	嘉義地區
嘉義市教師會	鍾孝瑩總幹事	(05)2858549 轉 162 olivia@mail.nta.tp.edu.tw	嘉義地區
環保聯盟台南分會	陳椒華理事長	06-3363751 fax:06-2759189 teputnbr@ms13.hinet.n	台南地區

		et	
美濃環保聯盟	李永龍執行長	0916851013 k1747@k.nl.ks.edu.tw	高雄縣美濃
美濃愛鄉協會	張正揚祕書長	07-6810371 Fax:07-6810201 Tseniong@etf.ngo.org.tw	高雄縣美濃
南台灣環境監督聯盟	李根政老師	07-2155660 07-2155645 kta85727@ms5.hinet.net	高屏地區
台灣教授協會	環保組召集人	02-23628797	全台
台東縣永續發展學會	黃正德總幹事	089-331681 fax:089-331692 eastsd@ms25.url.com.tw	台東
花蓮縣環保工作促進會	張淑美理事長	038-233119(T&F) rayhope@ms67.hinet.net	花蓮
花蓮縣環保連聯盟	鍾寶珠理事長	03—8510512 fax:03-8510513 ehups@ms27.hinet.nrt	花蓮
藍色東港溪保育委員會	蔡順柔	07-7892674 fax:7848431 actkr@ms8.hinet.ner	屏東縣
台北市社區生活環境關懷協會	鄭憲章理事長	02-8792-0565 fax:02-87912234 luyen@tpts5.seed.net.tw	北市內湖區
北市八頭里仁協會	詹熒熒	02-28917453 fax:02-28962660 yingying515@sinamail.com.tw	北市北投區
台北市社區婦女協會	夏甄薇	02-26349952 fax:26349954 wacd-tw@sinamail.com	北市內湖區
	陳朝琴會長	02-28955058	台北市北

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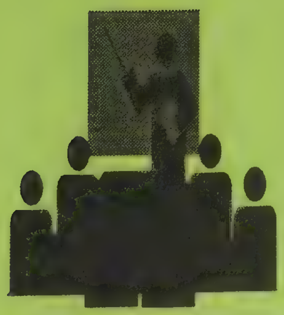
資料整理：綠色公民行動聯盟垃研會 2001.7.月 製表

WNA

Waste Not Asia
Annual Conference
Taiwan 2001



Oganizers:

Taiwan Watch Institute
Program for Southeast Asia
Area Study, Academia Sinica
Green Citizens' Action Alliance
Natural Environmental Protection
Foundation

Co-Organizers:

National Teachers' Association
Meinung People's Association
Formosa New Century Environmental
Foundation

Sponsors:

Ministry of Foreign Affairs
I-Land Municipal Government

WNA TAIWAN 2001

Waste Not Asia Annual Conference

Agenda

Date: 2001, 7, 26 ~ 30

Venue: Chien Tan Overseas Youth Activity Center

I-Land Social Welfare Building

Date	Time	Place	Activities	Time
7/25	16:00	Taipei	Arrival and Check-in	
7/26	8:30- 9:00	Taipei	Registration	
	9:00- 9:10		Opening and Welcome Address：Prof. Shien Yu Cheng (Director of Taiwan Watch Institute) and Prof. Michael Hsiao (Director of PROSEA)	10 mins.
	9:10- 9:20		Introduction of local participants	10 mins.
	9:20- 9:35		Introduction of Foreign participants	15 mins.
	9:35- 9:45		Presentation on GAIA and WNA	10 mins.
	9:45-10:15		Keynote Presentation: Dr. Chao-Han Liou（the director of National Sustainable Planning Project）	30 mins.
	10:15-10:30		Tea Break	15 mins.
	10:30-12:00		Keynote Presentation on Zero Waste/by Warren Snow（Zero Waste New Zealand Trust）	90 mins.
	12:00-12:15		Project Update: Kovalum Zero Waste Tourism Town	15 mins.
	12:15-13:30		Lunch	75 mins.
	13:30-15:00		Country Reports (15 mins. per country)	90 mins.
	15:00-15:15		Tea Break	15 mins.
	15:15-16:30		Country Reports (15 mins. per country)	75 mins.
	16:30-17:30		Presentation on the Economics of Waste Incineration: Case Study of Japan/by Ayako Sekine（Greenpeace Japan）	60 mins.
	18:00~		Welcome Party	
7/27	8:30- 8:45	Taipei	Program Review	15 mins.
	8:45- 9:45		Skill Share: How to Shut Down Incinerators	60 mins.
	9:45-10:00		Tea Break	15 mins.
	10:00-10:30		Skill Share to Continue	30 mins.
	10:30-12:00		Presentation on Basel/Stockholm Conventions and Waste Trade and Waste Incineration/ by Jim Puckett（Basel Action Network）	90 mins.
	12:00-13:15		Lunch	75 mins.
	13:15-14:45		Presentation on Extended Producer Responsibility/ Electronics Take It Back!Campain /by Leslie Byster（Silicon Valley Toxics Coalition） Signing of the ETIB Platform	90 mins.

	15:00-18:30		Take coach to Iland (mealbox dinner)	
	18:30~		Recreation(International Children's Folklore & Folkgame Festival)	
	21:00~		Return to the Hotel	
7/28	9:00-12:00	Iland	Presentation：The Promotion of NGO on Kitchen Waste Compost and Organic Farming	
	12:00-13:30		Lunch (Organic Bamboo-shoots dishes)	
	13:30-17:00		Visit to a Kitchen Waste Composting Pratice	
	17:00-18:00		Dinner	
	18:00~		Take coach back to Taipei	
7/29	8:30- 8:45	Taipei	Program Review	15 mins.
	8:45- 9:00		GAIA/WNA Progress Report	15 mins.
	9:00-10:00		WNA Strategies and Plans(small groups)	60 mins.
	10:00-10:15		Tea Break	15 mins.
	10:15-11:15		WNA Strategies and Plans(small groups)	60 mins.
	11:15-12:15		WNA Strategies and Plans(small groups to report back)	60 mins.
	12:15-13:00		Lunch	
	13:00-14:00		Summary and Adjourment	60 mins.
	14:00-17:30		City Tour	
	17:30~		Dinner/Night tour(Night markets)	
7/30	8:30-10:30	Taipei	Presentation: Pay-by-Bag policy Implementation and Practice	120 mins.
	10:30-11:30		Press Conference	60 mins.
	12:00-13:30		Lunch	
	13:30-17:00		Visiting Peitou incinerator & garbage recycling and classification	
	17:30~		Leaving Party	
7/31	9:00-12:00	Taipei	Departure	

REPORT

First Asian Anti-Incineration Alliance Meeting

(Founding Conference of Waste Not Asia)

With the decline of incineration as a waste management option in developed countries, waste management companies find Asia as a lucrative market to sell their dirty and discredited technology. Local communities and activists are finding it increasingly challenging to stop existing and proposed waste incinerators, many of which are backed by governments and multilateral development institutions. More and more, activists realize the need to reach out and connect with allied groups and create a common front to oppose waste incineration and seek non-burn, safe and ecological approaches to waste management.

It was under this backdrop that a group of 36 environmentalists from China (Hong Kong), Japan, Korea (south), Taiwan, Malaysia, Philippines, Thailand, India, Nepal, Pakistan, Guam and USA gathered for the First Asian Anti-Incineration Alliance Meeting on 26 -28 July 2000 at Chulalongkorn University, Bangkok, Thailand.

The Meeting discussed the pitfalls of waste incineration and explained proven alternatives to incinerating trash, shared national reports and responses to waste management issues, worked out a common statement of unity and identified broad plans to deal with the onslaught of waste incinerators on a regional basis.

From this Meeting arose the Waste Not Asia (WNA), a grassroots coalition that opposes waste incinerators, landfills and other "end-of-pipe" solutions and promotes sustainable non-burn alternatives to waste management. The coalition envisions a zero waste society that places prime importance on waste reduction and materials recovery through sustainable consumption, clean production and ecology-friendly approaches to waste management. WNA has since evolved as the Asian node of the Global Alliance for Incinerator Alternatives/Global Anti-Incinerator Alliance (GAIA).

This report of WNA founding assembly is divided into 2 parts: Section 1 summarizes the key events and results of the 2 ½-day Meeting, and Section 2 enumerates some practical proposals for follow-up and continuity that emerged from the plenary and workshop discussions.

We hope that this report will further enhance the unity of WNA.

Section 1

26 July 2000. The first day began with a welcome address by the Dean of the Political Science Faculty, Chulalongkorn University. The representatives of the Thai organizers followed him: Tara Buakamsri (Greenpeace Southeast Asia) and Penchom Tan (Campaign for Alternative Industry Network).

Von Hernandez (Greenpeace Southeast Asia) presented a background view of the Meeting and noted the importance of devising strategies and pooling resources to thwart the expansion of waste incineration in the region. He described the process of the Meeting and then asked the participants to briefly introduce themselves.

After the participants have introduced themselves, Dr. Paul Connett, co-editor of *Waste Not*, discussed at length why waste incineration is wrong, citing environmental, economic, health and ethical reasons that justify public opposition against this waste disposal method. The veteran anti-incineration activist also pointed out important global developments that pin down airborne emissions from incinerators as source of toxic pollutants such as dioxins and furans that contaminate the environment and disrupt the endocrine system. Nity Jayaraman (Greenpeace India) and Neil Tangri (Essential Action) spoke about the migration of dirty industries and the role of international finance and development agencies in the so-called toxic trade

After attacking waste incineration from different angles, Dr. Connett presented his thoughts on the alternatives to burning trash. He said that the real solution begins with source segregation because trash is made by mixing and trash is avoided by separating. Any successful source separation should be kept simple, local and sustainable and integrated with the local community and economy. He then described activities and facilities which support source separation, including waste audits, reuse and repair centers, composting and vermiculture, materials recovery services etc. He concluded by affirming that the way we handle our trash is a reflection of our concern for the earth "If we care about the planet we have to care about the way we treat our trash" said Dr. Connett.

Neil Tangri (Essential Action) then discussed the issues involved in medical waste incineration, particularly citing a study made by the US Environmental Protection Agency that identified medical and municipal waste incinerators as top sources of both dioxin and mercury pollution of the environment and the food supply in the country. He stressed the need for the healthcare industry to implement real solutions such as waste reduction, waste segregation, reuse and the application of alternative waste treatment technologies. His input was followed by a discussion on successful implementation of alternative waste management programs in certain countries.

Von Hernandez (Greenpeace Southeast Asia) led the discussion on the global initiative to eliminate persistent organic pollutants (POPs) and its relevance to anti-incineration work, locally and internationally. Participants talked about the on-going negotiation for a POPs treaty and how this process can be used to strengthen our position against incinerator pushers.

The organizers then outlined the proposed Regional Platform that is set for discussion and adoption on 27 July 2000.

Participants concluded the day with a session on international networking against incineration. The Meeting discussed the purpose and operation of allied networks such as the Health Care Without Harm, Clean Production Alliance, International POPs Elimination Network and the Global Environmental Health Alliance.

27 July 2000. The morning began with another input from Dr. Connett where he clarified the pros and cons of the so-called new technologies such as pyrolysis, plasma arc waste treatment, thermoselect and waste to energy incinerators.

Afterwards, the participants took turns in giving their country reports. They presented an overview of the waste management situation in their country, with emphasis on operating or proposed incineration schemes, and their campaign plans and targets. After the country

reports were presented, the participants then broke into regional workshops to discuss common problems, needs, campaign opportunities and recommendations. The main findings and suggestions are as follows:

South Asia:
Problems: low public awareness of waste management issues, no alert and response mechanism, lack of access to information, success stories not documented and publicized, lack of communication between groups, World Bank policies and projects.
Recommendations: find and publish positive models, seek technical support for a dioxin study, support the Zero Waste Kovalam initiave, explore/designate a roving anti-incinerator activist/regional node or secretariat to facilitate organizing and campaigning efforts.

Southeast Asia:
Problems: lack of transparency and democracy in certain countries, problem of "open burning" particularly in Indonesia and Malaysia, indebtedness of countries to World Bank and other financial institutions, funding limitations of small NGOs,
Recommendations: conduct national level skillshares/training programs, draw up directory of success stories, involve other social sectors in coalition building (poor, women, scientists, human rights advocates, church workers etc.)

Northeast Asia:
Problems: lack of involvement by the general public, lack of practical model programs, overconsumption patterns, policies and moves by TNCs and JICA.
Recommendations: document successful examples of alternatives, translate "Our Stolen Future," get support from experts (academics and scientists), identify/target "bad guys," demand JICA to end its incineration activities, do a counter-report of a JICA study.

The high point of today's program was the presentation and adoption of the Regional Platform (see appendix 1 "Waste Not Asia Platform"), along with the proposals for follow-up work (see Section 2).

28 July 2000. A press conference was held in the morning, followed by a synthesis and adjournment of the Meeting.

Section 2

At the plenary, the participants identified and agreed to undertake the following activities to pursue the mission of the newly-formed Coalition:

1. Link up with other groups and communities by disseminating the WNA Platform and gather support for it. Each participating group/country is to recruit 5 organizations as members. Promote the formation of regional coalitions in the various sub-regions of Asia.
2. Set up an information node/secretariat to facilitate information and communication exchange. George, Jayan, Neil and Nity are to develop a proposal by end of August 2000, including guidelines for the listserv, website and funding options, for submission to the WNA Steering Committee.
3. Specific projects/activities:
    a. Produce a report of JICA's promotion of bad technology (lead: Dr. Koa Tasaka, Japan's POPs Elimination Network).

b. Compile success stories of anti-incineration struggles and successful implementation of alternative waste management practices (lead: Howard Liu, Greenpeace China)
c. Circulate model legislation against waste incineration (lead: Von Hernandez, Greenpeace Southeast Asia)
d. Promote the WNA platform at the IPEN Meeting in South Africa in December 2000 (lead: Von Hernandez, Greenpeace Southeast Asia and Jayakumar, Thanal Conservation Action and Information Network).

4. Hold next WNA meeting in Taiwan in July 2001.
5. To facilitate the work of the WNA, the Meeting constituted a Steering Committee comprising of Rajesh Rangarajan (India), Koa Tasaka (Japan), Mageswari Sangaralingam (Malaysia), Toran Sharma (Nepal), Von Hernandez (Philippines), George Cheng (Taiwan) and Neil Tangri (USA).

Appendix 1

WASTE NOT ASIA PLATFORM

The Vision

Waste Not Asia is a coalition of citizens' groups and individuals from Asia and the Pacific who support a commitment to:

- A decentralized community-based reuse, recycling and composting programmes that promote materials recovery rather than materials destruction.
- Opposing waste landfills, incinerators and other end-of-pipe interventions;
- Ensure that manufacturers are held responsible for designing products and packaging that are ecologically sound through every stage of their life cycle.
- Eliminate persistent organic pollutants or POPs and move towards a toxic free future.
- Reduce generation of waste, promote clean production and move towards a zero waste society.

Whereas, Asia is going through a period of rapid economic and industrial development patterned along the lines of the environmentally and socially destructive throwaway society and culture of over-consumption prevalent in the industrialized North;

Whereas, the increasing consumption in Asia is resulting in growing mountains of garbage and other wastes which are sought to be disposed in landfill or burnt openly or in incinerators;

Whereas, Asia is under siege from multinational corporations, international financial institutions, aid agencies and governments who seek to push material disposal and destruction technologies such as landfills and incinerators;

Whereas, indiscriminate dumping and landfilling of unseparated waste is causing severe environmental, social and public health problems which disproportionately impact and dislocate low income neighborhoods and communities;

Whereas, many countries are running out of both physical and political space to site new landfills;

Whereas, burning waste, with or without the recovery of energy, puts dangerous substances such as toxic metals, dioxins, furans and polychlorinated biphenyls (PCBs), into the air and into the residual ash;

Whereas, the United Nations Environment Program has identified dioxins, furans and PCBs as persistent organic pollutants requiring priority global action;

Whereas, the poor economic and environmental track record of incinerators and landfills in industrialized and developing countries has led to intense public opposition to such technologies;

Whereas, many incinerator and landfill proposals have been linked to corruption scandals and undemocratic decision-making processes;

Whereas, the disposal and destruction of materials robs future generations of resources, drains local communities of finances and resources, thwarts local economic development and undermines rational approaches to waste management, and concentrates economic benefits in the hands of a few corporations;

Whereas, a large informal sector in many Asian countries already exist that provides invaluable service by recovery and recycling;

Whereas, incinerators, landfills and other "end-of-pipe" solutions endanger the progressive and superior alternatives that are being pioneered in communities and municipalities around Asia detract from initiatives to reduce waste and toxics in manufacturing;

Whereas, the over-reliance of "end-of-pipe" solutions encourages exploitation via the export of wastes and dirty technologies;

Whereas, the investments in landfills and waste destruction technologies are saddling many nations and communities with debilitating debts and undermines poverty alleviation programs;

Whereas, lending institutions and international aid and financing agencies, by bankrolling these projects, play a key role in promoting retrogressive waste destruction practices;

Whereas, the production and use of unsustainable materials such as polyvinyl chloride (PVC) has led to the poisoning of human health and the environment;

Whereas, several disasters – such as the Payatas dumpsite collapse in the Philippines and the continuing disaster of Japanese dioxin emissions – have indicated the futility of "end-of-pipe" solutions;

Whereas, the presence of dioxins, furans and other chemicals in breast milk and human bodies is a form of chemic trespass that threaten the well-being of particularly vulnerable populations namely fetuses and infants;

Whereas, this chemical trespass violates women's fundamental rights to bear healthy children and to breast feed;

Therefore, we demand that:

Multilateral, bilateral and private aid and lending institutions like the Japan International Cooperation Agency (JICA), USAID, the Asian Development Bank and the World Bank:

- End funding for materials destruction methods, including incineration and related disposal technologies.
- Cease providing secretive, distorted and biased prescriptions on waste management to governments.

The UN and affiliated bodies:

- Condemn and end the promotion of incinerators and other materials destruction technologies.

Our Governments:

- Ban new incinerators and phase out existing ones.
- Promote materials recovery rather than materials destruction.
- Support local initiatives which benefit communities rather than corporations.
- Open all decisions on waste management to full public participation and transparency at every stage of the process.
- Ensure waste solutions are democratically decided and socially just.
- Provide avoided disposal costs to communities and businesses which divert recyclable and compostable materials from landfills.
- End hidden subsidies for landfills and incinerators.
- Prioritize waste reduction at source, clean production, pollution prevention and sustainable materials use.
- Phase out unsustainable materials such as PVC and other chlorinated compounds.
- Support the demand for elimination of POPs in the ongoing treaty negotiations under the auspices of the United Nations Environment Program.
- Track the elimination of POPs by determining levels of dioxins and furans and other chemicals in the food chain and in mothers' breast milk on a regular basis.

Adopted 29 July 2000, Bangkok, Thailand

Recycling Association of Guam (Guam)
DISHA (India)
Thanal Conservation Action and Information Network (India)
Toxics Link (India)
Japan POPs Elimination Network (Japan)
Korean Network for Waste Free (Korea, south)
Consumers' Association of Penang (Malaysia)
Nepal Forum of Environmental Journalists (Nepal)
Society for Conservation and Protection of Environment (Pakistan)
Junilyn Silvestre, Clean Air Coalition (Philippines)
Von Hernandez, Ecological Waste Coalition (Philippines)
Eero Brillantes, Landfill Watch (Philippines)
Green Citizens' Action Alliance (Taiwan)
Green Formosa Front (Taiwan)
Meinung People's Association (Taiwan)
Taiwan Watch Institute (Taiwan)
Campaign for Alternative Industry Network (Thailand)
Community Right Institute (Thailand)
Environmental Conservation Group of Klong Toe (Thailand)
Phuket Environmental Group (Thailand)
Sustainable Energy Network for Thailand (Thailand)
Essential Action (USA)

Appendix 2

LIST OF PARTICIPANTS

China	Clement Lam, Greenpeace China
	Howard Liu, Greenpeace China
Guam	Berrie Straatman, Recycling Association of Guam
India	Jayakumar, Thanal Conservation Action and Information Network
	Rajesh Rangarajan, Toxics Link
	Nityanand Jayaraman, Greenpeace India
	Shailendra Yashwant, Greenpeace India
	Sasanka Dev, DISHA
Japan	Ayako Sekine, Greenpeace Japan
	Kawana Hideyuki, Japan POPs Elimination Network
	Koa Tasaka, Japan POPs Eliminaton Network
Korea	Jung Youn-Koung, Green Korea United
	Lim Young Ja, Korean Network for Waste Free
	Kim Eun-Kyung, Seoul Metropolitan City Assembly
Malaysia	Mageswari Sangaralingam, Consumers' Association of Penang
Nepal	Toran Sharma, Nepal Forum of Environmental Journalists
Pakistan	Asma Hussain, Society for Conservation and Protection of Environment
Philippines	Eero Brillantes, Landfill Watch
	Junilyn Silvestre, Greenpeace Southeast Asia/Clean Air Coalition
	Von Hernandez, Greenpeace Southeast Asia/Ecological Waste Coalition
Taiwan	George Cheng, Taiwan Watch Institute
	Jian Zhi Chen, Green Citizens' Action Alliance
	Joyce Chia-Chieh Fu, Green Formosa Front
	Tung Han Chou, Green Formosa Front
	Yu Pei Hsiao, Green Formosa Front
	Kao Chieh Chang, Meinung People's Association
	Hua I Tseng, Dong Hua University
Thailand	Peter Burt, Campaign for Alternative Industry Network
	Penchom Tang, Campaign for Alternative Industry Network
	Chaipan Prasawat, Community Right Institute
	Tara Buakamsri, Greenpeace Southeast Asia
	Yanuar Sumarlan, Greenpeace Southeast Asia
	Suphakij Nuntavorakarn, Sustainable Energy Network for Thailand
	Wanrob Hirikul, Klongtoey University
USA	Paul Connett, Waste Not
	Neil Tangri, Essential Action/Multinationals Resource Center

Global Anti-Incineration Alliance
Global Alliance for Incineration Alternatives

The Lowell Statement

Drafted in Lowell, Massachusetts, USA, June 2000
by participants in the International Clean Production Training

Whereas incinerators for medical, municipal and hazardous waste threaten human health and the environment through the production and release of toxic substances including dioxin, mercury and other toxic pollutants;

Whereas dioxin acts as an endocrine disruptor with adverse effects on reproduction, development, and the immune system and has been classified as a human carcinogen by the World Health Organization's International Agency for Research on Cancer and by the United States Environmental Protection Agency;

Whereas the United Nations Environment Programme has identified dioxin as one of twelve persistent organic pollutants requiring priority global action;

Whereas incineration disperses toxic substances over the planet and pollution control devices merely shift this pollution to solid waste residues and waste water which continue to threaten the environment and public health;

Whereas incineration drains local communities of financial resources, wastes energy and materials, thwarts local economic development and undermines rational approaches to waste management;

Whereas strong public opposition to incinerators exists in northern countries and increasingly around the world, international incinerator pushers are scouring the globe - especially targeting Third World countries - in search of new markets;

Whereas in all countries incinerators are disproportionately sited in low income communities and communities of color;

Whereas many incinerator proposals have been linked to corruption scandals and undemocratic decision-making processes;

Whereas alternatives to incineration exist which are proven, safer and economically sound;

We, the undersigned individuals and organizations, call upon our governments to halt proposals for new incinerators and phase out existing incinerators. Instead we call for the implementation of production and waste management systems which are based on the principles of clean production

and environmental justice. These include toxics use reduction; waste reduction, re-use and recycling; guaranteed public access to information and public involvement; and sustainable, equitable and just consumption patterns.

We are fully aware that the means to implement more sustainable methods of production and waste management exist. We consider this an opportunity for political leaders to take forward our proposal and demonstrate their commitment to the well-being of future generations.

Keynote Presentation

Notes about Speakers of Keynote Presentation

WARREN SNOW

Over 20 years ago, Warren Snow left a private business background to work in the area of community development and helped to create the Community Business and Economic Centre (CBEC) in Kaitaia, an economically hard hit area of the far north of New Zealand. CBEC set up and ran a number of environmental businesses that gave jobs to local unemployed people and became one of the biggest employers in the community.

Warren has since assisted communities throughout New Zealand to set up community owned enterprises that focus on creating jobs through recycling and waste reduction and other environmental businesses. Warren has found that each community has the human and natural resources to solve its own problems and that too often they look outward for solutions which often leads to disempowerment. His passion is helping communities to see their real potential and feels that by looking within, their potential is unlimited.

He has spent the last five years managing New Zealand's largest private philanthropic fund, The Tindall Foundation. He now operates his own business, Envision NZ Ltd, which focuses on breakthrough strategies designed to move society rapidly toward sustainability. In addition to this he provides management support to and serves as Director of the Zero Waste New Zealand Trust (web: www.zerowaste.co.nz). Zero Waste New Zealand provides grants to communities and groups involved in economic development through eliminating waste. Over one third of New Zealand's local authorities have set targets of Zero Waste by 2015 with more joining. The government is also considering introducing zero waste into their policy.

AYAKO SEKINE

Ayako Sekine joined the Japanese branch of Greenpeace in 1991 (web: www.greenpeace.org). She started campaigning on toxics issues in 1996. Her concern against waste incineration saw her undertaking an in-depth study on the costs of this expensive and dirty technology, and supporting communities in their fight to shut down incinerators. She is likewise involved in the PVC-free toy campaign aimed at eliminating PVC in baby toys in Japan through a legal ban.

JIM PUCKETT

Jim Puckett is Director of the Seattle-based Asia Pacific Environmental Exchange (APEX) and coordinator of the Basel Action Network (BAN). He has been a toxics activist for eighteen years. Prior to moving to Seattle to found APEX, and BAN, Jim worked for eight years in Amsterdam as Greenpeace' s Toxic Trade Campaign Coordinator and as International Director of Toxics. Under his direction Greenpeace achieved a global ban on the dumping of toxic waste at sea (within the

London Convention) and an international ban on the export of hazardous wastes from OECD to non-OECD countries (within the Basel Convention).

Additionally he worked to establish numerous regional waste trade bans in Africa, Central America, EU, Pacific and Mediterranean regions. Currently BAN's first priority is to see that these bans are implemented and ratified by enough countries to put them into the force of international law. BAN is also working to ensure that the recent adoption of the Stockholm Convention is not used as an excuse to destroy POPs utilizing incineration technology. BAN is a member of the International POPs Elimination Network (IPEN), Health Care Without Harm (HCWH) and the Global Anti-Incinerator Alliance (GAIA). For more information on BAN, visit www.ban.org.

LESLIE BYSTER

Leslie Byster joined the Silicon Valley Toxics Coalition (SVTC) staff in 1992 as Program Director. Since 1999 she has served as SVTC Communications Director. She is SVTC's webweaver, produces SVTC's Action and other publications of SVTC and the International Campaign for Responsible Technology (ICRT), an international network committed to working for the development of sustainable, non-polluting technologies. She regularly communicates with SVTC's international partners and members of the ICRT list-serve in the US and around the world.

Leslie also works on the Clean Computer Campaign which is focusing on the escalating electronic waste problems across the US and works to clean-up the life-cycle of computer manufacturing and promote environmentally sustainable development, extended producer responsibility, and corporate and government accountability. She works on issues regarding trade, toxics and the environment, has researched the environmental and occupational health impacts of the high-tech industry and has written for several journals. For more information, visit SVTC's award-winning welbsite at www.svtc.org

Zero Waste

New Thinking for a Sustainable Society

Warren Snow
Director of
Zero Waste New Zealand Trust

Over the last hundred and fifty years mankind has created an enormous industrial system based on the premise that resources can be extracted and waste from the system poured into nature forever. Everything that we make in every factory is on its way (sooner or later) to a landfill or an incinerator. The total output of the human industrial system is waste and materials are flowing through our communities and ending up as waste faster than at any time in history. But finally we are starting to realise that resources are finite and that nature can no longer absorb the vast quantities of waste that we are pouring into her.

The same industrial system that created the problem has created two solutions for waste; the first is landfills and the second is incineration or burning. A landfill is just a big hole in the ground; a better name would be 'toxic waste pit'. New research tells us that landfills will have to be looked after for up to a thousand years and yet the aftercare requirements in many landfill contracts are as short as thirty years. The big waste companies walk away after thirty years and leave the community for many generations to deal with the heavy metals, toxins, gases, damage to the environment and the loss of land. The other solution is to burn waste, with all the consequent toxic releases into the atmosphere and dangerous residues still going to landfill. Add to this the loss of valuable resources, jobs and embodied energy. We are becoming victims of our own 'old' thinking.

Both of these solutions are born of a system that still believes it can triumph over nature that man can always create a new solution to the problems that man creates. But these solutions always create further problems down the road. We need a new vision, a new approach, and a new solution to waste. Communities around the world are rising up against waste, fighting landfills and incinerators and in many cases stopping them. But for every one that's stopped, ten more are proposed and the corporations that propose them have huge resources and use the same thinking that created the industrial system and the problems in the first place. Gaia is becoming recognised throughout the world as a key part of the community based anti-incineration movement and as such is a bright shining light of hope for the many people who suddenly find that there is going to be a huge landfill or incinerator in their back yard.

We must fight to stop incinerators and landfills, but also we need to provide a third solution, one that everybody can agree with, one that everybody can stand for. Zero Waste is 'for' something; it's for a new industrial system, a new design for a sustainable society. Zero Waste provides people who are 'anti' something with a real positive alternative. Zero Waste is a competing disposal technology, competing directly with incinerators and landfills. All around the world, surveys show support for and participation in recycling to be over ninety percent, yet recycling has not changed the industrial system because it deals with the final outputs of the system and has very little impact on the design of the products and services that flow through communities and eventually require burying or burning.

Zero Waste seeks nothing less than the total redesign of the industrial system. The good news is that Zero Waste can out-compete existing waste disposal technologies not only from the social and

environmental perspective but also the economic. Zero Waste as a new vision and strategy fo society is attracting support from surprising quarters. People from big business, cities, government international consultancies, small business, community groups, inventors, entrepreneurs, and financiers are coming to see Zero Waste as a driver for creating sustainable communities. One tha is practical, realistic and economic but most of all one that gives everybody who is concerned fo the fate of the planet hope that they can make a difference. We can pull back from the brink o economic disaster and create a new society based on an industrial system that creates more and more value with less and less through-put of materials, to create a closed loop materials efficien society.

A significant benefit of Zero Waste is that it favours local communities and local economies When materials start to circulate local opportunities are created and start to reverse the forces o globalisation, which until now have increasingly maginalised small distant rural communities and certain sectors of society. People on low incomes and with less education will be able to find local opportunities for training and employment as more and more industries spring up around the materials that are being diverted back into the economy or nature. Zero Waste is a breakthrough strategy for a society in crisis. Incremental change won't bring about the change we urgently need We need a total breakthrough, a totally new way of looking at the problem, something that leads to a new paradigm, a new vision, and a new target for society. Zero Waste is that vision and target.

In New Zealand we have set a national target date of Zero Waste by 2020. The New Zealand government have not adopted it yet but our campaign is based around the aim of encouraging the New Zealand government to adopt a national strategy of Zero Waste by 2020.

The New Zealand story so far is that since setting up the Zero Waste New Zealand Trust in 1997 we have helped galvanise a network of around 50 community-based groups that have set up local action campaigns to reduce waste in their communities. Many of these groups have won contracts from their councils to provide education resources in schools or to actually take control of parts of the waste stream. A number of them run transfer stations, which they have turned, into resource recovery centres. Some of them have quite large contracts with cities to run kerbside recycling programmes or waste collection systems where they are using the money or the funds from those waste collection systems to redesign processes that will result in high diversion of waste from landfill.

We have been able to convince (40%) of New Zealand's municipalities to adopt targets of Zero Waste by 2015. This doesn't mean that all of these municipalities have done a lot more than the councils that haven't adopted Zero Waste, its just that they now have a new vision, and target so that when decisions are made by council staff on waste they must take into account that at the very top of their waste policy is this official target 'Zero Waste by 2015'. All of their planning and waste systems must be designed around this target. This is resulting in changes in the way that contracts are written and the design of waste systems that focus on resource recovery. Transfer stations are being converted into Resource Recovery Centres and Resource Recovery Centres are being designed from the ground up with recovery in mind. Our whole aim is to starve landfill. New Zealand does not have incineration, as we were able to successfully block them from coming to New Zealand.

To keep community groups active and to encourage them, we provide small seeding grants for projects and grants to meet and network, travel and grants to learn through various types of training that will assist them to better manage their local community based recycling program. We also have a number of people who are setting up small business as 'Zero Waste Advisors', these people are very important and specialise in different areas such as hospital waste, Resource Recovery Centre design, waste audits, management, training, kerbside recycling, community based

businesses etc etc. We try to support Zero Waste advisors because if their businesses become successful through our initial support then we have more people on the ground advising the correct way to set up waste systems. The success of the whole Zero Waste campaign in New Zealand is dependant on community groups, cities, institutions and businesses getting the right advice. Too many engineering consultancies and advisors in the past have been unaware of the power of waste reduction and recycling and even less of the Zero Waste concept and they have tended to advise on how to build bigger and better waste systems or even recommending that the cities not recycle because it is not economic, when this is totally incorrect. So by having our own advisors we know that they will give the correct information and also work with their customers to make sure their waste minimisation projects are implemented properly.

The Zero Waste New Zealand Trust also provides support for entrepreneurs who are inventing new products, machines and processes that use recycled materials. Many small communities in New Zealand have suffered through the liberalising of the economy and the impacts of globalisation. Development of recycling and recovered materials industries can reverse those impacts and create employment and business opportunities in economically hard hit communities. Already this is happening all around New Zealand; one trend that we are seeing is for inventors and entrepreneurs to be coming up with new ideas for the use of recovered materials to the extent that a number of businesses are now exporting their products and materials out of New Zealand. This is becoming quite a significant industry and a number of these businesses wouldn't have got of the ground if it weren't for the support of the Zero Waste New Zealand Trust through either a small seed grant to help them develop their invention or through technical support. Up until now the traditional banking system has not recognised recycling and lack of access to capital has been a major impediment to the building of the industry.

The Zero Waste New Zealand Trust holds conferences and seminars around New Zealand and the sponsorship of these events helps to keep everybody's ideas flowing and provides support to keep the movement strong. We are surprised at times at the number of jobs that small communities can create through recycling and the recovered materials industry. Many of the non-profit community groups that have set up community businesses are able to reach deeper into the waste stream than the market economy could ever do because their driver is quite different to private enterprise. They want to create jobs and wealth for their community, they want a future for their children and are prepared to work at far smaller margins than private operators would ever think of, sometimes even at a loss in order to maintain a service that will keep people employed in their community. In the long run the communities that have done this have ended up with far greater waste reduction outputs and greater numbers of people employed.

A survey in Auckland of 65 businesses, four years ago showed that those 65 businesses were employing over 1700 people and contributing $133 million dollars per annum to the economy. All of them were in growth mode and had problems getting access to finance. Over the last two years we have set up a specialised fund called the 'Recycloans Fund' in recognition of this problem. The Recycloans Fund is dedicated to supporting the recovered materials industry and fundraises to lend money to new recycling initiatives and people making products from recovered materials.

In New Zealand we consider that our clean environment is our nations biggest asset, inextricably linked to the success of our export and tourism industries. Current waste disposal methods pose serious threats to our reputation as clean source of food and products for the world and as a clean tourist destination. Cheap disposal to landfill and the possibility of using incinerators will threaten our efficiency and our industrial competitiveness.

New Zealand with a population of less than four million is littered with old landfills. Most of them are near or on sensitive marine and fresh water systems. One city can count 50 old closed landfills,

all this in less than a hundred years. On the worldwide scene we know that increasing populatic multiplied by increasing consumption will result in increasing waste. We cannot allow ol thinking to guide our destines, old thinking creates landfills; toxic waste pits with endless leachin of heavy metals and toxins into our environment. Old thinking designs incinerators and tries t bluff us that they are safe. We must stand against these but we must also project a new vision an that vision is Zero Waste.

A crisis demands action, a breakthrough. Zero Waste in itself is not a technology but rather basket of technologies that can compete head to head with landfill and incineration. Already Zer Waste is changing the way businesses, institutions, communities, schools and individuals thin about waste. We are slowly educating people to think beyond the end of the pipe; to look at th whole supply chain as their business and that every time they buy something they must think wher it will end up at the end of its life.

We want everybody to take personal responsibility; we want designers to design products that ar durable, repairable and easy to disassemble for recycling and made of materials that can easily b incorporated harmlessly back into nature or back into the industrial system. We war manufacturers to invest in new design, to create products with no waste, to eliminate wastefu packaging and to take responsibility for the whole lifecycle of their products. We want retailers t ask their buyers to think about every single product that they buy and to demand that their supplier create products in an environmentally sound way with fair labour conditions and no waste.

Retailers must provide systems for consumers to return goods for disassembly and to start movin from selling products to leasing and servicing. We want universities and schools to teach Zer Waste as part of their basic curriculum and to have their own recycling systems in place. We war them to teach people that when they leave school to work in industry to be responsible for helpin to redesign the industrial system so that human society can truly be part of nature. We want ther to deeply understand that the human economy is a subset of nature not the other way around.

We want consultants and engineers to retrain and gain new systems of understanding around waste train in the Zero Waste technologies that are being created around the world. We want communit organisations to work with local authorities and municipalities to create sustainable employmen opportunities by eliminating waste at the end of the pipe and returning all recycled materials bac into the industrial system or harmlessly back into nature.

We want governments to take the leadership role and to put the vision of a Zero Waste societ forward for their communities and industries to make their countries more competitive. Those countries that don't aim for Zero Waste will increasingly become less efficient and competitive an their economies will decline.

The road to Zero Waste is a journey and we have to be very clear on where we are going on any journey. The vision and the target must be Zero Waste, we need a date to go with that vision ou suggestion for New Zealand is 2020. Many large companies who have set goals of Zero Waste an many of them are close to achieving that with some of their processes.

There are three core principles for a Zero Waste strategy;

1. The first principle is 'end cheap waste disposal'. The only way to make Zero Waste possible is for the true cost of disposal to be charged to the waste generators. If we were to charge the true cost of disposal nobody would be able to design something that was going to end up in a landfill or incinerator because the cost of that product would be too high and nobody would buy it.

2. The second principle is 'design waste out of the system'; Zero Waste is an 'end of-pipe' strategy but above all it is a design principle. We must design waste out of the system if we are to achieve Zero Waste and we must design the strategies that will enable the supply chain to be radically changed so that it all points up and down the chain, each person is playing their part in creating closed looped, resource efficient systems.

3. The third principle is 'engage the people'. No vision and no target will be successful if we do not engage every single person and help them to believe that it is possible to move towards the target; in New Zealand this is what we are trying to do.

There is still a long road ahead and there are many critics waiting and watching for us to fail. Our vision is strong and our target is firm, we are slowly building the infrastructure for a Zero Waste economy and society. If in New Zealand we set a target of Zero Waste by 2020 we will once again be leaders.

New Zealand was the first country in the world to give women the vote and the first country in the world to ban nuclear weapons; our hope is that New Zealand will be the first country in the world to set a target of eliminating waste by 2020. My colleagues and I believe that this is totally feasible and we are working as hard as we can to research the technologies, the processes and the social inventions that will help us to achieve our goal. We also challenge other groups, institutions, people and countries to join us in this quest; It doesn't really matter who is first as long as we are all aiming for the same vision, we can redesign our society for sustainability and that's what Zero Waste is; A new design for a sustainable future.

The Construction Cost of Municipal Waste Incinerators
Counter Measures against Dioxin
The Entire Picture of Domestic Expenditure and Its Trend
(Interim Report)

May 21, 2001

Greenpeace Japan
Greenpeace International

GREENPEACE

The Construction Cost of Municipal Waste Incinerators
Counter Measures against Dioxin
The Entire Picture of Domestic Expenditure and Its Trend
(Interim Report)
(English Summary)

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Greenpeace has entrusted this survey to Environmental Research Institute Inc. in March 2001.

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ERI is one of the reliable independent consultant and think tank established in 1986, tackling and seeking solutions for global and local environmental problems. In addition to the contract research for the government sectors' environmental policy making, ERI has been playing an important role as an independent NGO research institute through presentation and advice based on voluntary research projects. ERI is also promoting the effective environmental education through research projects with citizens participatory environmental monitoring. ERI has been developing and providing various original computer softwares to local municipalities as the useful tools for implementing the environmental administration.

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Executive summary

Introduction

The amount of wastes produced by households in Japan is almost 400 million tons per year. These wastes are then incinerated in 1800 municipal solid waste incinerators (MSW), The number of incineration plants in Japan equals almost two thirds of the large scale incineration plants currently existing in the world[1]. It has been reported that the total release of dioxins to air in Japan was the largest among the 15 countries surveyed by UNEP in 1996 as the World Dioxin Inventory[2].

While there were various facilities that emit dioxins into the air, waste incineration is the main identified source here in Japan. So far, vast amounts of taxpayer's money have been invested to construct and improve the facilities of the incineration plants all over Japan. These additional costs have been expended in an attempt to improve old type incinerators with installation of advanced technologies for the reduction of exhaust gas dioxin concentration, and for the construction of new large scale incineration plants under the pretext of dioxin control. These technical counter measures have been claimed to be the only solution to reduce dioxin releases into the air and have taken priority over other policies and possible measures for dioxin control.

How much money has been invested to incinerate household waste in our society? What is the true costs of these technological attempts to control dioxin emission from incineration plants? Are these tremendous expenditures reasonable for the establishment of resource sustainable society and for the solution of avoiding the hazardous chemical substances in our future world? Finally, how do developing countries evaluate the Japanese investment towards incinerators as they attempt to shift from open air burning of wastes to more refined waste management systems?

Greenpeace commissioned the Environmental Research Institute Inc. in March 2001 to examine the full extent of tax investment that Japanese government has expended so far in the promotion of waste incineration. This report reveals for the first time the vast amount of tax investment towards the construction of waste incineration plants and various technical counter measures intended to control dioxin emissions from incinerators.

Summary

The expenditure for constructing waste incineration plants are mostly covered by national subsidies (for those plants that fulfill certain conditions) and the flotation of loans by the local municipalities. The rest are covered by the general budget of each municipality (Fig.2-1). The information for this survey was derived from reports by the Ministry of Environment (former Ministry of Health and Welfare) concerning national subsidies and the Ministry of General Affairs (former Ministry of Home Affairs) regarding loans from municipalities. From this information it has become clear that the total expenditure for the construction and improvement of waste incineration plants in Japan has cost the taxpayer between 600 billion yen to 800 billion yen per year over the last five years. This is approximately 5 – 7 billion dollar as exchange rate 120 yen/dollar. (The exchange rate is set as 120yen/dollar hereafter.)

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[1] M. Hiraoka et al.: Organohalogen Compounds, 19, 275-291 (1994)

[2] UNEP, Dioxin and Furan Inventories - National and Regional Emissions of PCDD/PCDF ,May 1999.

1. Trend of national subsidies and its trend

The information on national subsidies for the construction of waste incineration plants was derived from the newly adopted projects of FY1995 to the projects unofficially notified in FY2000. Regarding the national subsidies for advanced technologies for emission gas control (e.g. more sophisticated facilities such as bag filters for reducing the dioxin emission from the stacks), data was also obtained also from the newly adopted projects of FY1995 to the projects of unofficially noted in FY2000.

1.1 The number of cases applied national subsidies for the construction of waste incineration plants and advanced technologies for emission gas control facilities and its trend

The Ministry of Health and Welfare announced new guidelines for controlling dioxin emissions from the waste incineration plants in 1997. Since then, the number of national subsidies for advanced emission control facilities such as bag filters has increased by almost the same number as that of construction of new waste incineration plants. However, the number of subsidies for the construction of new incineration plants has decreased because national subsidies have been limited to larger scale plants (capacity of incineration over 100t/day). On the other hand, the value of subsidies per project was increased and the subsidies for facility improvement for controlling dioxin emission have increased greatly. In FY2000, with the enactment of new regulations reinforcing the exhaust gas emission for dioxin from December 2002 near at hand, the number of subsidized projects was 171 which was a 10 fold increase from that of 1995 and 1996. (Figure 1)

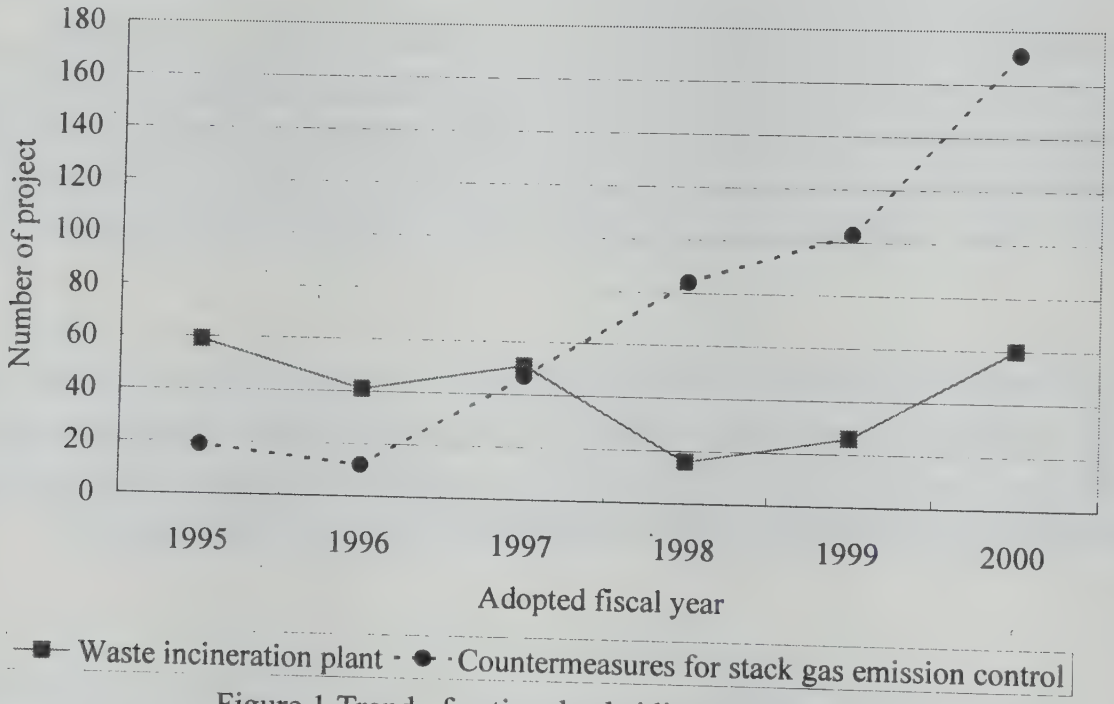

Figure 1 Trend of national subsidized projects

1.2 Trend of national subsidies amount

The amount of national subsidies for waste incineration plants has leveled off during these years to around 40 billion yen (330 million dollar) per year. However, as for the improvement of facilities, the number of projects was increased. Since the average term of construction became longer, the amount of subsidies has increased into 40 billion yen in FY2000, which is a 10 times increase from the year 1997.

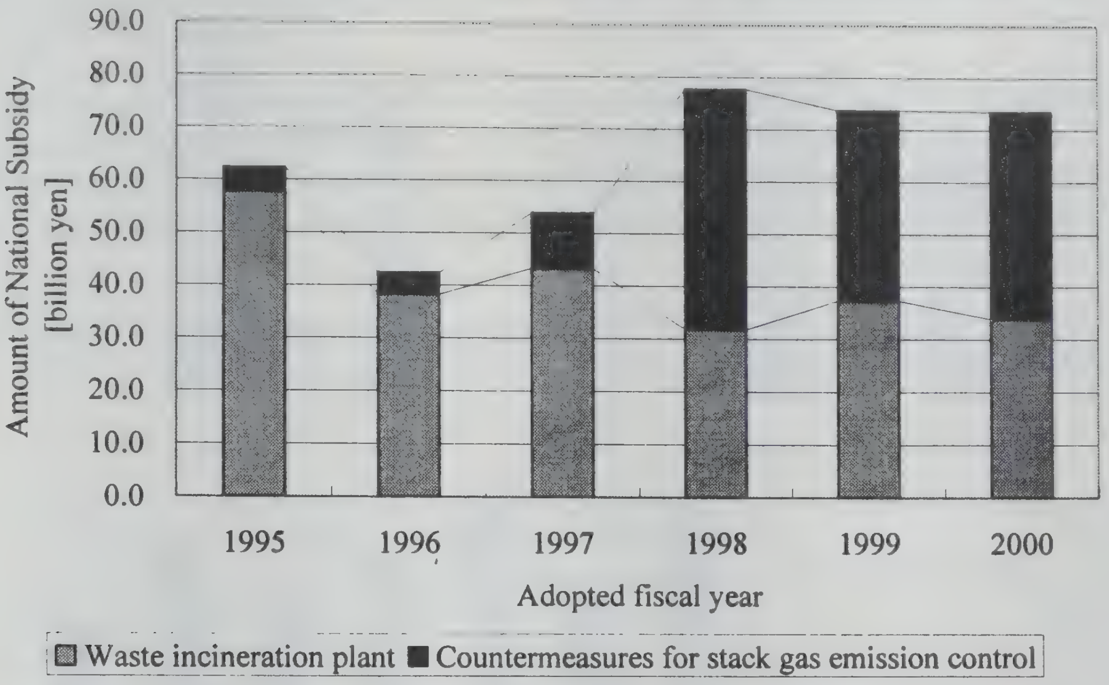

Figure 2 Trend of National Subsidy Amount

The total amount of national subsidies shown in Figure 2 is the sum of subsidies executed up to FY1999 including nonofficial notified amount in FY2000. However, the final total of the cost for those projects under construction since FY1997 and FY1998 were not fixed. Therefore, the final amount of national subsidies was not fixed as well at that time. This means that the amount of subsidies after FY1998 looks small against the final amount of subsidies expected in future. It has to be noted that the final amount of national subsidies could be far higher at the year of project completion.

Thus, judging from the factors that subsidies per project increases, the number of project increases and the period of construction becomes longer, it is possible to estimate that the amount of national subsidies will increase until FY2002, the year from which the new stringent regulation for exhaust gas emission will start.

2. Trend of flotation of loans by municipalities

Table 1 shows the amount of loans (bonds) by local municipalities from FY1991 to FY1999 for projects concerning the household waste incineration and final disposal (except human waste treatment).

Table 1 Trend of authorized municipality loans concerning waste incineration plant

Authorized fiscal year	Amout of Flotation of loans [million yen]			
	Waste incineration plant	Land aquisition	Waste transportation facilities	Sum
FY 1991	200,991	33,454	7,440	241,885
FY 1992	286,966	42,070	3,694	332,730
FY 1993	443,559	179,760	4,115	627,434
FY 1994	446,654	31,143	6,326	484,122
FY 1995	556,705	43,955	7,227	607,887
FY 1996	497,327	37,180	6,987	541,495
FY 1997	439,593	41,153	6,926	487,673
FY 1998	505,467	46,490	6,537	558,493
FY 1999	399,216	42,096	5,327	446,639

Source: Ministry of general affairs

Figure 3 shows the trend of local loans authorized (permitted) by the national government (former Ministry of Home Affairs). Among them, 80-90 % was for waste incineration plants and facilities (except FY1993). However, loans for purchasing the land and for preparing the waste transportation facilities were relatively small (Note 1).

Note 1: In FY1993, the ratio of land purchasing was comparatively large for about 30%. In that same year, Tokyo Metropolitan Government had transferred the authority of waste management to municipalities of 23 wards in Tokyo and had acquired the land under the policy that each ward has to have a waste incineration plant in future. Consequently, 13.58 billion yen (100 million-dollar) out of 18.22 billion yen (150 million dollar) were experded for land acquisition in Tokyo.

As shown in Figure 3, the trend of the amount of authorized loans grew rapidly until FY1995 and after that it leveled off or decreasing slightly.

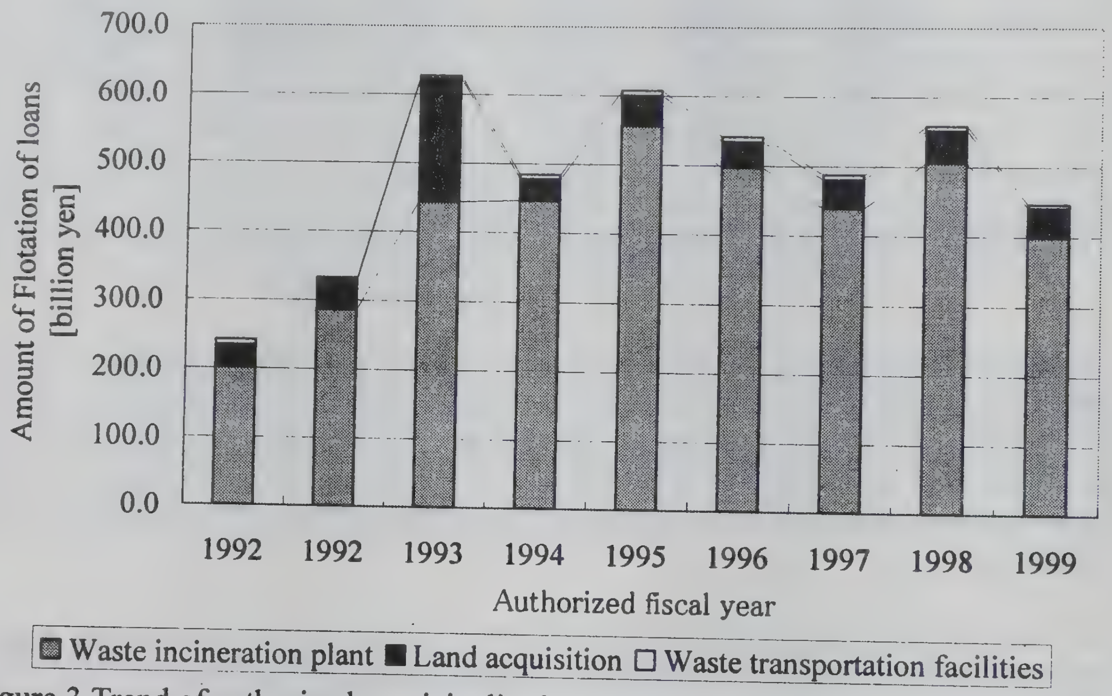

Figure 3 Trend of authorized municipality loans concerning waste incineration plant
Source: Documents from Ministry of General Affairs

3. Estimation of total expenditure

We have estimated the total expenditure for waste incineration plants in Japan by analyzing the above data. Figure 4 shows the trend of expenditure including the revenue in detail. It is found that almost 600 billion-yen – 800 billion yen (5 – 7 billion dollar) were expended for the construction of waste incineration plants every year. However, it has to be noted that this is may not reflect the total expenditure for the projects of a certain fiscal year. This is because there are inconsistency for the year of execution between national subsidies and municipal loans and also there are certain assumptions applied by substituting representative number for those data not obtained so far. Consequently, 10-20% of the total expenditure was supported by national finance and the rest (80-90%) was supported by the expenditure of local municipalities. Again, it has to be noted that the amounts for the latest projects supported by national subsidies appear to be small and may not accurately reflect the final costs.

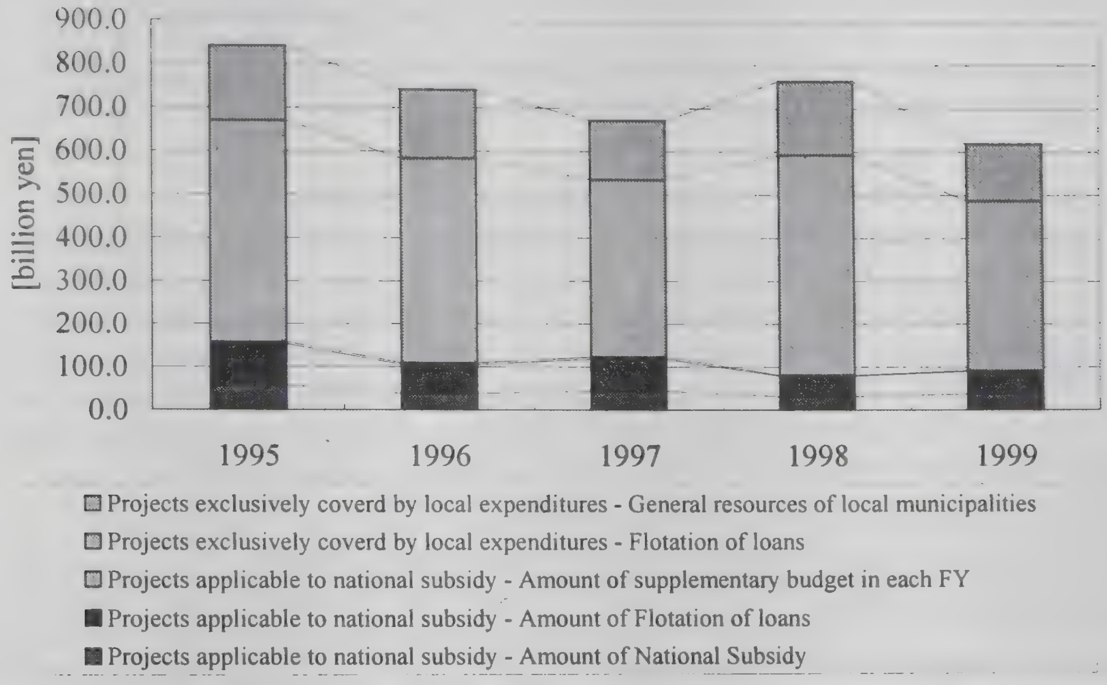

Figure 4 Estimation of total expenditure for waste incineration plant

4. Conclusion

(Mechanism of tax pumped into the incineration plants)
Almost 50-80% of the construction cost of waste incineration plants is ultimately expended by the national government through subsidies and tax funds to local municipalities. In other words, under this mechanism, the tax expenditure that each municipality has to bear is rather small. The ratio of local municipalities' tax burden account for the total expenditure is less than 2.5% at the first fiscal year. Further the redemption of the loans over a span of 10 years or more after the completion of the projects is partly expended by the national fund. This also minimizes the expense burden of municipalities. This is the same mechanism as for other public works such as dam construction. Consequently, the policies of each municipality are greatly affected by the intention of national government, especially of its national subsidies and tax fund. This is one of the aspects that has made independent policymaking by local governments inactive and difficult.

(The whole picture of tax expenditures used for waste incineration plants)
It was found that almost 600 billion yen – 800 billion yen (5 – 7 billion dollar) have been expended for the construction of waste incineration plants every year both from national and municipal expenditures. In FY2000, with the enactment of new regulation reinforcing the exhaust gas emission for dioxin from December 2002 near at hand, the number of subsidized projects for existing plants was increased 10 times from that of 1995 and 1996. It shows that those existing incinerators were built and being operated carelessly about dioxin emission.

(Policy change of waste incineration into larger scale and area-wide type plants)
There was a policy that the waste incineration and disposal should be done within the area of the each municipality before FY1998. However, the former Ministry of Health and Welfare had greatly changed the system of national subsidies in FY1998 based on the policy shifted to construct the larger and area-wide incineration plants (in principal the minimum requirement for subsidy is more than 100t/day capacity of incineration).

The impact of this policy shift appeared quite definitely. The average scale of the facilities (plants) funded by national subsidies in FY1998 became more than 2 times larger compared to that of the year before. On the other hand, the number of subsidized projects decreased one third at the same time. This evidence shows that the Japanese policy of waste management has obviously turned 180 degrees around to strengthen incineration by collecting the waste from area-wide municipalities and by constructing large scale incineration plants through out country.

However, the former Ministry of Health and Welfare had to withdraw this minimum requirement for national

subsidies in FY2000. This was because of severe opposition from the municipalities of rural areas of low population density against this policy shift. Naturally, the area-wide garbage collection would be a large burden for those small municipalities. However, since the national government still sticks to the principal of area-wide waste management, the basic policy of constructing the area-wide and larger scale incineration plant has not been changed.

(Apprehensions caused by area-wide and large-scale incineration plants)
During these few years, various laws and regulations concerning resource recycling have been established in Japan. At the same time, the volume of waste has been reducing steadily. It is reported that the rate of operation is declining in some of the large-scale incineration plants in Tokyo and the lack of waste is becoming reality. This gives a hint of the future outcome of the Japanese waste management policies relying heavily on area-wide and large-scale incineration plants. This policy is apparently inconsistent with the establishment of sustainable society by reducing the waste from our society. In other words, we have to recognize that the policy of heavy dependence upon the incineration will interrupt (hinder) people's effort to make a resource-recycling society.

(Opacity (Turbidity) of tax expenditure for the waste incineration plants)
It becomes clear through this research and analysis that the total tax expenditure concerning waste incineration plants in Japan has been hidden and not fully grasped by the public. The mechanism of the expenditure is quite complicated in that various government organizations such as former Ministry of Health and Welfare (Ministry of Environment), former Ministry of Home Affairs (Ministry of General Affairs), prefecture governments and local municipalities, have been expending taxes based on various different laws and legislation.
Although each Ministry or government authority does have sufficient information about their tax expenditure (e.g. Ministry of Environment for national subsidies, Ministry of General Affairs for flotation of loans of local municipalities, and local governments for project base expenditures), the related documents and data are not prepared and publicized for the taxpayers in an appropriate manner.

In addition to that, the revised Guidelines (thick printed book) which indicate the detail requirements and rate of national subsidies have been distributed to each local municipality every year. These Guideline books are published and sold by Japan Waste Management Association, an extra-governmental organization.

Further, illegal collusion between contractors of the various public works has been highlighted recently. It is not the exception in the cases of waste incineration plant construction. In August 1999, the Fair Trade Commission issued a recommendation of exclusion as a violation of antitrust laws against 5 major companies, whose market share of the sales of large-scale incinerators over 100t/day reached 70%. In addition to that, 292 laboratories of dioxin analysis have also received the notification from the Fair Trade Commission in the same year. Judging from this evidence, it has to be noted that the tax expenditure for dioxin control measures in Japan suffers from injustice, is unreasonable and is not transparent. Greenpeace intends to continue to examine and report on this important theme.

5. Greenpeace Demands:

The upcoming Stockholm Convention on Persistent Organic Pollutants (POPS) clearly identifies incineration as a potentially significant source of by-product POPs such as dioxins, furans, HCB and PCBs. To reach the Convention's aim of ultimate elimination of by-product POPs, means that the investments and subsidies for incineration should be discontinued and the national government and municipalities must direct subsidies and tax-refunds towards waste prevention, re-use and recycling. Though the responsibility for waste management in Japan lies primarily with the local communities, it is clear that the central government is currently promoting incineration through its subsidies and tax refunds.

To further direct waste management away from incineration, the central government should also set out a clear policy and action plan to halt the expansion of incineration in the very short term and to phase out incineration. This is necessary because incineration is an important POPs source that needs to be eliminated. But incineration also disperses other toxic substances into the environment, such as heavy metals, and is a known cause of a wide range of health effects to communities that live near incinerators. Incineration is also a very expensive way to destroy valuable resources, costs that are shouldered by these same communities.

The Stockholm Convention:

Marking The Beginning Of An End To Waste Incineration?

Jim Puckett
coordinator of
Basel Action Network (BAN)

In Stockholm, Sweden on May 22nd of this year, the international community adopted the Stockholm Convention – a new international treaty to eliminate 12 of the most persistent organic pollutants (POPs). As chair of the negotiations, Mr. John Buccini proclaimed the treaty as a declaration of war against POPs. That same day the Global Alliance for Incinerator Alternatives (GAIA) issued a press release declaring in unison, a war against incineration.

Indeed, while the treaty provides many new advancements for toxics activists in general, it has seriously implicated waste incineration as part of the global POPs crisis. In so doing, the treaty has endowed our movement with a new and powerful set of tools to persuade policy makers around the world to avoid this inappropriate and environmentally harmful waste management option.

Like all international agreements, which are negotiated on the basis of consensus and thus can be lowered down to any one country's idea of a "common denominator", the Stockholm Convention is far from an environmental masterpiece and contains an expected amount of wobbly caveat language. Nevertheless, this "wishy-washy" language is significantly the *exception* to the rules presented which, if implemented in good faith according to letter and spirit, will throw serious doubt on all incineration projects.

It will of course be up to civil society to see that this scenario actually takes place, and much work, nationally and internationally to ensure strong interpretation and implementation of the treaty will need to be done. Once a treaty is adopted the real battle over its efficacy truly begins. Needless to say, ironically there is a massive industry which would wish to sell incineration as a "solution" to the POPs crisis and it will thus be necessary for us to loudly and strategically counter the globe-trotting industry spin-doctors and pollution peddlers.

The Goal of Minimizing and Eliminating Dioxins and Furans

The first issue area (Article 5) has to do with the fact that the treaty has appropriately and crucially included, *furans dioxins, PCBs, and hexachlorobenzene* as unintentionally produced POPs on the list of the initial 12 targeted chemicals. As such, a goal has been set for their *"continuing minimization and, where feasible, ultimate elimination"* with all Parties being required to develop an action plan within two years of entry into force of the Convention, to identify, characterize and address the release of these unintentional POPs by applying *"best environmental practices"* and *"best available techniques"* to reduce or avoid existing and new sources.

Whereas the other, intentionally produced POPs (i.e. aldrin, chlordane, dieldrin, DDT, endrin, heptachlor, mirex, toxaphene, and PCBs) include but a handful of chemicals, many of which have already seen their global production seriously curtailed, the listing of by-product POPs such as

dioxins/furans, means that the treaty will indirectly takes on a far more vast and significant scope including not only the entire chlorine industry and its products such as PVC plastic, chlorinated solvents etc., but numerous production and waste management technologies that produce dioxins/furans as well. Included among these is incineration, for it is well known that incinerators, no matter how designed, all lead to the production of some levels of dioxins and furans as by-products of combustion of wastes. Indeed in an annex, the Stockholm Convention provides a list of sources that have the *"potential for comparatively high formation and release of such unintentional POPs."* Included are: *waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge; cement kilns firing hazardous waste."*

Incineration proponents will no doubt try to seek comfort from the fact that the treaty on most instances, speaks of "releases" and not total production of dioxins/furans, and thus try to claim that such POPs captured by air pollution control devices and ash collection do not constitute a "release" to the environment. However, it must be noted that in one of the most important yet often overlooked paragraphs of the Convention, it states that Parties must *"promote the development and, where it deems appropriate, require the use of substitute or modified materials, products and processes to prevent the formation and release of"* dioxins/furans. The use of the word "formation" particularly in the context of this crucial Substitution Principle will make it very difficult to advocate incineration as long as alternative processes exist that do not allow for such *formation* of dioxins/furans.

A New Disposal Paradigm for POPs: No Deposit – No Burn

The second issue area (Article 6) with great implications for the future of incineration deals with how to destroy existent POPs wastes including obsolete pesticide, PCB and dioxin stockpiles. This section of the treaty is precedent setting in that it provides us with a new high standard with respect to what constitutes appropriate hazardous waste disposal. The Convention calls for Parties to take measures so that POPs wastes are:

> *"Disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed so that they do not exhibit the characteristics of persistent organic pollutants..."*

While the text above is followed with some caveats such as excepting low levels of POPs content, which must await further interpretation, the use of the words *"destroyed or irreversibly transformed"* so that they do not exhibit the characteristics of POPs, is meant to be inclusive of all outputs (not just releases) and goes far beyond what has previously been envisaged for any chemical waste in international law. The Stockholm treaty also states that POPs wastes cannot be recycled in any way.

This language means that unless the POPs waste in question qualifies as an exception to the rule, POPs wastes can no longer be simply "deposited" (e.g. management options such as landfilling, deep-well injection, sub-seabed disposal, etc.). Nor can they be recycled. Nor can they be processed (e.g. incineration) *if* the process used results in outputs, including residues or by-products, released to the environment or not, exhibiting POPs-like characteristics. Currently, most authorities still allow POPs stockpiles to be disposed of via incineration. Until now, this has been considered appropriate disposal even when it is known that such combustion processes invariably entail POPs outputs of dioxins and/or furans which then must be subject to an imperfect and very costly effort to capture them to prevent their uncontrolled release to the air. Now, however, it is clear that even the "most advanced" incineration technology will have great difficulty in meeting the new higher bar posed by the Stockholm Convention for POPs waste

disposal. For even recovered dioxins from air pollution control devices such as those found in fly ashes will be considered as part of the equation.

Pointing the Way to Incineration Alternatives

With continued vigilance and pressure from member groups of such global anti-toxics networks as GAIA, IPEN (International POPs Elimination Network), HCWH (Health Care Without Harm), BAN (Basel Action Network) and PAN (Pesticide Action Network) to ensure that only the most progressive implementation and interpretation of the treaty prevails, it is very likely that authorities will have to admit that incineration is at best, an interim method to be replaced by alternative technologies. Thus the global effort to rid society of POPs will likely give new impetus and life to many long existent or emerging waste management methods that either prevent or reduce wastes, or actually *destroy or detoxify* historically produced hazardous wastes. These include: use of less packaging and one-time or short-time use products, avoiding toxic inputs, composting, source segregation and recycling of non-hazardous wastes, or for existent hazardous waste stockpiles such as PCBs and obsolete pesticides, utilize a new generation of chemical or biological destruction methods that don't produce new POPs such as dioxins and furans as by-products of the process.

As outlined above, the Stockholm Convention endows activists with a strong set of globally accepted political/legal tools to utilize in resistance to the increasing proliferation of misguided incineration technologies. These policy arguments combined with effective use of powerful economic arguments, will complete a toolbox that should allow common sense alternative methods of waste management to prevail and allow us to close the sad chapter of our society's attempt to burn our way out of the waste crisis.

END

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Electronics Take It Back! Platform

Sign on to the Electronics Take It Back! Platform!

Leslie Byster
Program Director of
Silicon Valley Toxics Coalition (SVTC)

Join the others! Send us a note with your name, organization and city, state. Please put "platform sign-on" in subject line.

Introduction

Discarded electronic equipment is one of the fastest growing waste streams in the industrialized world, due to the growing sales and rapid obsolescence of these products. Electronic equipment is also one of the largest known sources of heavy metals and organic pollutants in the waste stream. Without effective phase-outs of hazardous chemicals and the development of effective collection, reuse and recycling systems, highly toxic chemicals found in electronics will continue to contaminate soil and groundwater as well as pollute the air, posing a threat to wildlife and people.

The Electronics Take It Back! Campaign supports the guiding principle called Extended Producer Responsibility (EPR) for post-consumer electronics waste. The objective of EPR is to make brand name manufacturers and distributors financially responsible for their products when they become obsolete. Our ultimate aims are pollution prevention and waste avoidance through a hierarchy of practices, including source reduction, reuse, re-manufacturing and recycling.

Currently, the expense of collecting, managing and disposing of discarded electronics -- including household hazardous waste collection and hazardous waste site cleanup -- is borne by taxpayer-funded government programs, primarily at the local level. We support having manufacturers and distributors assume responsibility for these costs, so that they can be internalized and reflected in product prices. This creates a powerful incentive for manufacturers of electronics to reduce such costs by designing products that are clean, safe, durable, reusable, repairable, upgradable, and easy to disassemble and recycle.

Companies that innovate more quickly will end up being more competitive than those that delay. Many companies in countries throughout Europe and Asia are already implementing EPR programs in response to government regulations.

In order to achieve the vision of electronics EPR, we have adopted the following platform:

Take It Back!

Financial and/or Physical Responsibility.

Manufacturers and distributors of electronic equipment must take financial and/or physical responsibility for their products throughout the entire product lifecycle, including in particular take-back and end-of-life management. This responsibility must include:

1.reduced use of hazardous materials in manufacturing;

2.collection, disassembly, reuse and recycling of discarded computer equipment to the highest degree practicable; and

□ 3.requirements that recycling is done in an environmentally sound manner.

Infrastructure development.

EPR will foster development of effective, environmentally sound and sustainable infrastructure for collection, re-use, re-manufacturing and recycling of electronic equipment.

Stop hazardous waste exports.

□ The federal government should ban exports of hazardous materials from discarded electronic waste equipment.

Taxpayer relief.

□ We oppose efforts to force taxpayers to pay for electronic waste collection, recycling and disposal through local government initiatives, such as household hazardous waste programs.

Community re-investment.

□ The recycling infrastructure developed under an electronics "take back" system should support local economic development in domestic reuse, re-manufacturing and recycling processing systems.

Internalize costs.

- EPR internalizes "end-of-life" management costs in the price of electronic equipment by shifting the burden from taxpayers to industry, so that those with effective "take-back" and recycling programs are not put at a competitive disadvantage.

Recycling Goals.

- The electronics industry should meet aggressive recycling goals and implement methods for tracking and publicizing success.

Make It Clean!

Adopt the Precautionary Principle.

- Where there is a threat to health or the environment, a precautionary approach requires taking preventive action even before there is conclusive scientific evidence that harm is occurring. The federal government should develop and implement strict protocols for testing chemicals and mixtures before they are introduced into the markets.

Phase-out hazardous materials.

- The electronics industry should end the use of chemicals that are dangerous to human health or the environment (including lead, mercury, cadmium, brominated flame retardants, chlorinated solvents, and other hazardous materials).

Proper handling of hazardous materials.

- Manufacturers of electronic products should protect workers, the public and the environment from hazardous materials until safer substitutes are developed and used.

Design for the environment.

- Manufacturers of electronic products should develop and use safer, less toxic materials; design for durability, upgradability and disassembly; avoid designing 'disposable' products; and reduce consumption of water and energy resources throughout the product lifecycle.

Closed-loop recycling.

- The electronics industry should design products to be easily repaired and upgraded to extend their useful life; incorporate recycled content and remanufactured components into new products; and develop closed materials cycles.

Zero Waste

- The goal is to ban all discarded electronic equipment from going to landfills or trash incinerators and to end environmentally unsound recycling practices.

Fair Labor!

Protect workers.

- The electronics industry should apply stringent occupational health and safety standards to manufacturing and recycling facilities throughout the product chain; eliminate exploitation of workers in prisons and within manufacturing facilities throughout the world; and end unsafe labor practices.

Fair pay.

- The electronics industry should institute livable wages for all workers throughout the product chain, including sub-contractors.

The right to organize.

- The electronics industry should recognize the rights of workers to organize at electronic equipment manufacturing plants and recycling facilities throughout the product chain.

Current Status and Future Development of Municipal Waste Disposal in Taipei City

Taipei City
Dept. of Environmental Protection

Current Status of Municipal Waste Disposal

Taipei City has adopted a municipal waste policy favoring incineration as the primary means of disposal and landfill as the auxiliary means of disposal. Taipei City currently has three municipal waste incinerators, in Neihu (installed daily capacity of 900 tons), Mucha (installed daily capacity of 1,500 tons), and Peitou (installed daily capacity of 1,800 tons). Working at full capacity these three are able to process the vast majority of the City's municipal waste. Taipei City's second (and only operating) sanitary landfill, the No. 2 Landfill, is located in Nankang. The landfill has a total capacity of 6.17 million cubic meters and is used primarily for incombustible wastes and incinerator ashes. Current remaining capacity is 1.4 million cubic meters which means the landfill will most likely reach capacity by the year 2003. For this reason the Taipei City Department of Environmental Protection (TDEP) is actively working to establish the No. Three sanitary landfill.

Neither incineration or landfill disposal methods constitute resource reuse. Such disposal methods have a definite impact on the environment and run contrary to the principles of sustainable use. For this reason Taipei City policy is already switching over to waste minimization, resourcification, and diversification of disposal options. At-source reduction and encouragement of resource reuse and recycling can greatly reduce the environmental pressure caused by municipal waste disposal. Some concrete measures adopted by the city include use of a "per bag trash collection fee" and separate collection of kitchen wastes. In 1999, before implementation of the per bag trash collection fee, Taipei City trash collection crews collected a daily average of 2,970 tons of household waste and waste from street sweeping (hereafter referred to as 'general waste'). Additionally, an average of 802 tons of general waste and general industrial waste (hereafter referred to as industrial refuse) was brought to city incinerators or landfill by private collection companies. The combined daily average waste volume was 3,772 tons. After implementing the per bag trash collection fee on July 1 until September 30, the average quantity of household waste collected dropped to 1,919 tons while the daily average of industrial refuse collected rose to 1,006 tons. The combined total of 2,925 tons represents a 22% reduction over the 1999 daily average of 3,772 tons. Since the TDEP halted Sunday trash collection on October 1, through June 30 , 2001 the daily average quantity of waste collected changed to 1,891 tons for household waste and 1,000

tons for industrial refuse. The combined daily average from October to June , 2001 are 2,891 tons, is a 23.4% reduction over the 1999 daily average of 3,772 tons.

In terms of resource recycling, in 1999 before institution of the per bag trash collection fee, Taipei City trash collection crews collected a daily average of 73 tons of recyclables. From June 1, 2000, after implementation of the per bag trash collection fee, to June 30 , 2001 the TDEP collected a daily average of 176 tons of recyclables, a recycling rate of 8.46%. This represents a nearly 3.6 times increase over the 1999 recycling rate of 2.38%.

The above numbers clearly demonstrate that Taipei City's waste minimization policies have been effective at stimulating greater waste minimization and resource recycling. To further strengthen the results of current waste minimization policies the TDEP is actively preparing to begin comprehensive segregation of household kitchen waste collection in the year 2001.

Future Outlook for Waste Disposal

The TDEP aims to make Taipei an "eco-city" in line with concepts of sustainable development and the global village. In pursuit of this goal the 2020 targets for waste disposal in Taipei City are none less than "zero landfill" and "total recycling". During the waste disposal transition, the large available land space at the No. 3 Landfill site will be used to help diversify disposal options, eventually transitioning to a recycling park to help in realization of "zero landfill" and "total recycling" goals. For this reason, there is also a good chance that most of the original ecosystem can be preserved at the No. 3 Landfill. Concrete steps are as follows:

Implement "zero landfill" and "total recycling" waste disposal methods

- *implement per bag trash collection fee to encourage household waste minimization and sorting of recyclables*
- *legislate and enforce bans on products that create large volumes of waste*
- *self- or contracted disposal of industrial wastes and mandatory pre-sorting of recyclables*
- *promote recycling and reuse of organic wastes*
- *introduce and install total waste sorting and recycling facility*
- *shred, sort, and recycle bulky waste and construction waste*
- *caloric recovery of non-recyclable wastes*
- *reuse of incinerator ashes*

Projections of future waste and recyclables volumes in Taipei City

After beginning the per bag trash collection fee on July 1, 2000 trash volumes in Taipei City have decreased noticeably. In light of future bans on items that generate large volumes of waste and at-source waste reduction efforts, volumes for all types of

waste items and recyclables should be maintainable at levels comparable to the second half of the year 2000. One exception is sludge from sewage treatment, which should increase due to future construction of additional sewage treatment plants. After implementing the per bag trash collection fee City waste and recyclable volumes have been estimated as follows:

household waste - 2,220 ton/day, consisting of:

917 ton/day of organic waste (600 ton/day of household kitchen waste, 310 ton/day of restaurant kitchen waste, 7 ton/day of yard waste from schools and neighborhood parks)

100 ton/day of organic waste from general markets

50 ton/day of large or bulky waste items

943 ton/day of general waste

210 ton/day of recyclables

industrial waste - 1,000 ton/day, consisting of:

11 ton/day of yard waste collected from public parks

100 ton/day of organic waste from wholesale markets

145 ton/day of incombustible industrial waste

700 ton/day of combustible industrial waste

44 ton/day of construction waste

drainage ditches - 250 ton/day (90% water content)

sludge from sewage treatment plants - 100 ton/day

animal feces - 2 ton/day

Future Taipei City demand for waste and recyclable treatment facilities

Of the waste items mentioned above, sewerage treatment sludge and animal feces will be incinerated or composted independently by the Sanitation Office and City Zoo. In addition to existing incineration and reuse facilities the following facilities are still required for the treatment of remaining waste items:

composting plant (1,800 ton/day): treat kitchen and organic wastes

recyclable sorting plant (260 ton/day): fine sorting of recyclables

total trash sorting and recycling plant (2,000 ton/day): after sorting in this plant combustible non-recyclable items then sent to incinerator shred, sort, recycle facility for bulky waste items and construction waste (100 ton/day) storage and pretreatment facility for pre-auction recyclables (800 ton/day) incinerator ash melting or solidification and reuse facility (500 ton/day) landfill: to be used for landfill requirements during the transition to total recycling, final disposal of non-reusable wastes after intermediate treatment or emergency disposal.

Minimum capacity of 3 million tons or 5 million cubic meters.

Taipei City Organic Waste Reuse Promotion Plan

Each day in Taipei City yard waste from City schools, public parks, and neighborhood parks; waste from fruit and vegetable companies; kitchen waste and slop from restaurants; household kitchen waste; sludge from sewage treatment; and animal feces from the City Zoo account for nearly 1,230 tons of organic waste. These organic wastes account for close to 40% of all daily waste generated in the City and if recycled would bring Taipei a great step closer to achieving recycling goals. For this reason the TDEP has already formulated the *Taipei City Organic Waste Reuse Promotion Plan* which will later be entrusted to all related government departments for implementation. The plan promotes comprehensive reuse of City organic wastes. Future work and division of labor are as follows:

yard waste: 18 ton/day – the Bureau of Education (2 tons), Bureau of Civil Affairs (5 tons), Office of City Parks (11 tons), will be responsible for promoting and guiding onsite composting organic waste from food markets: 200 ton/day – (100 tons transported by TDEP, 100 tons by private waste haulers) reuse will be guided by market management offices in cooperation with hog rearing enterprises, or waste will be treated through self-composting or composting through a contracted party restaurant kitchen waste: 310 ton/day – TDEP will guide restaurateurs and hog rearing enterprises to cooperate and reuse household kitchen waste: 600 ton/day – in addition to encouraging neighborhood self-collection and composting, the TDEP or a contracted party will sort and recycle and establish a kitchen leftovers composting site sludge: 100 ton/day – treated at a composting site established by the Sanitation Office or a private contractor, or treated through onsite composting animal feces: 2 ton/day – treated through onsite composting by the Zoo.

Household and industrial waste

In addition to the self composting of organic waste from public parks, schools and neighborhoods and cooperation with hog rearing enterprises to reuse waste from restaurants and schools, the TDEP is considering establishment of further facilities for treating any remaining sorted and compostable household or industrial wastes. Sorted waste would be gathered through a centralized collection system and shipped for pretreatment to either an anaerobic or aerobic fermentation facility to be established at the No. 3 Landfill site or the Neihu Incinerator. Following, decomposed materials would be sent to a compost plant to be established at the No. 3 Landfill. Manufactured compost would be popularized for reuse. The anaerobic fermentation facility mentioned above would be operated within an airtight negative pressure system, like an incinerator, to control any odors generated.

Remaining non-sorted household and industrial waste would all be shipped to the total sorting facility to be installed at the No. 3 Landfill. Recyclables would first be segregated into those directly auctionable and those with a relatively high auction value after

pretreatment. Compostable items would be treated at an anaerobic or aerobic fermentation facility to be established at the No. 3 Landfill site. When ready, decomposed materials from the fermentation facilities at the No. 3 Landfill and Neihu Incinerator would be sent together to the compost plant at the No. 3 Landfill. Manufactured compost would be popularized for reuse. Non-compostable, combustible items would be sent respectively to the Neihu, Mucha, and Peitou incinerators to recapture their caloric value and generate electricity. Remaining incombustible items and incinerator ashes would be sent for melting treatment or solidification at the new facility to be established at the Peitou incinerator and popularized for reuse as construction materials, such as walkway bricks sewer and drainage sludge. The organic sludge and sludge from the clearance of all types of drainage ditches would be incinerated or treated through anaerobic digestion and then sent to the No. 3 Landfill for composting with other organic wastes

Planned Timeline for Achieving Zero Landfill by 2020

Achievement of the City's long-term goal of "zero landfill" by 2020 requires a soundly planned timeline for installation of the previously mentioned waste treatment facilities. Only when the treatment needs for all types of waste can be met can will City waste minimization and recycling goals be realized. Since implementation of the per bag trash collection fee on July 1, 2000, the growth of trash volumes has stabilized. Thus, planning conservatively the scale of new treatment facilities will be based on numbers from the second half of the year 2000. Detailed installation timetables are as follow:

2001 – 2005 phase

During this phase, besides the City's three incinerator plants, work items to be completed include: exchange of 150 ton/day of restaurant kitchen waste to hog rearing enterprises; TDEP trial establishment of a 30 ton/day composting plant; compost of 18 ton/day of yard waste by public parks and schools; shredder facilities for bulky waste items with 100 ton/day capacity; and implementation of mandatory waste sorting. Additionally, because the large scale composting plant, recyclables sorting plant, and No. 3 Landfill will still be in the first stages of construction, initial estimates are that 698 ton/day of waste from incinerator ash and drainage sludge will be disposed of at the No. 2 Shanchuku Sanitary Landfill, an estimated total of 1 million tons (1.8 million cubic meters) over four years. During this four year period an estimated 2,451 tons of waste will require incineration each day

2006 – 2010 phase

During this phase a 900 ton/day composting plant and 300 ton/day precursor to the total waste sorting plant will be installed. In addition the first stage of construction on the No. 3 Landfill is scheduled for completion. Initial estimates are that 466 ton/day of incinerator ashes, non-compostable items and waste leftover from sorting will still require

landfill. During this five year period it is estimated that 900,000 tons of waste (1.5 million cubic meters) will require landfill and 1,541 ton/day of waste will require incineration

2011 – 2015 phase

In addition to adding a 500 ton/day capacity compost plant and a recyclable sorting plant, construction should be completed on a 1,600 ton/day total waste sorting and recycling plant as well as the second stage of the No. 3 Landfill. An estimated 212 ton/day of incinerator ash, non-compostable waste and waste leftover from sorting will require landfill. During this five year period it is estimated that 450,000 tons of waste (750,000 cubic meters) will require landfill and 775 ton/day of waste will require incineration.

2016 – 2020 phase

Technology advancement by this time mean that melting and solidification reuse facilities should be completed by the year 2020. Thus it will be possible to effectively reused the incinerator ash, non-compostable waste and waste leftover from sorting mentioned above, effectively achieving Taipei City's goal of "zero landfill". However, an estimated total of 450,000 tons (750,000 cubic meters) of waste would still require landfill from 2015 – 2019. The keys to achieving zero landfill, total recycling (material and energy recovery) and waste minimization goals at each stage lies in the establishment of a market to reuse post-recycling products. This includes government adoption of appropriate and timely subsidy policies, provision of the land required for recycling, and allowing previously uncompetitive recycling products and activities to find room for growth. Also, important is whether or not economically feasible recycling and reuse technology (such as using melted or solidified incinerator ash for construction material) become commercially mature in time. Because the above plans implicates a broad range of issues, including central and local government laws and regulations, detailed support measures must still be clarified and established. Although concrete policies have not yet taken shape the TDEP will continue to strive towards this direction.

Country Report

CAMBODIA

Community Sanitation and Recycling Organization (CSARO)

Current Waste Management Issues

Cambodia located in South East Asia, currently has a population the region of 12 million people, of whom 15+% presently live in urban settlements. Existing figure for solid waste generation indicated that at least 700+ tons of waste are generated daily in the main cities and provisional towns across the country. Two thirds of the recorded waste generated is in Phnom Penh the capital

Outside of Phnom Penh and a few provincial towns, most of the waste is simply dumped on vacant land outside of the towns. Those cities and towns that do operate dumpsites are usually uncontrolled in nature, poorly managed and may pose a significant risk to the environment and possibly to public health.

Ongoing difficulties in solid waste management can be attributed to the shortage in skilled and experienced human resources to manage and operate waste management systems; appropriate equipment to ensure cost effective collection and transportation of waste; accessible finances due to inefficient revenue generation; and remuneration of workers to encourage effective operation.

Other waste sectors (medical, industrial, hazardous/toxic) are only now beginning to increase in volumes due to the recent rise in industrial development. However, deficient legislation, regulation and enforcement allow significant amounts of illegal dumping. Additionally, the ability of the Government to adequately and effectively monitor dumped waste is lacking.

In the recent past recyclable materials were kept and either used, sold or exchanged, However as progress is made and consumption grows, disposal practices are changing with growing volumes of waste being dumped everywhere. Unfortunately, this has been paralleled with a contraction in the recyclable materials markets. Materials which previously had been exported to neighboring countries where the economies are present to undertake commercial recycling have either disappeared or shrunk in most cases except for the very high value materials (aluminum and other selected metals). Additionally, export duties have been introduced which makes the recycling markets uneconomical. This has led to an increase in the volumes of waste being dumped

Emerging Waste Management Issues

One of the emerging concerns of Cambodia's solid waste sector has been the rapid and recent transition from biodegradable materials (paper bags, banana leaves, etc.) to non- biodegradable materials (principally plastics) that has taken place in the last decade. Unfortunately plastic waste can be seen strewn close to nearly every town and village in the country and are also beginning to seen in even remote areas. All forms of plastic currently in use have become a persistent source of environmental pollution. Increasing industrialization is creating growing volumes of industrial waste of which a certain percentage is potentially hazardous.

Waste Incineration Issues

The only existing incinerators are specialized small-scale operations usually for the disposal of medical and sanitary waste in certain medical facilities across the country.

In terms of municipal incineration, there are currently no planned projects. Preliminary discussions were held between a foreign company and the Municipality of Phnom Penh few years ago, but the economics of such an operation were not feasible. There has been no progress to date.

However, a number of foreign companies have previously approached the Government of Cambodia about the possibilities of establishing incineration operations in the country, primarily in the coastal town of

Sihanoukville. These proposals were often based on the ability to import waste for incineration due to the low combustibility of nationally produced waste due to the high organic content. However, none of these appear to have progressed further, than initial discussion.

Awareness of environmental pollution risks from various waste rose dramatically toward the end of 1998 when a large consignment of building waste was imported, which was contaminated with mercury. This possibly caused at least one death and associated illnesses in a number of poor families who scavenged the waste. After being alerted about the problem, the national Government sought and obtained the assistance from WHO, UNDP and foreign donors abroad and by June 1999 all the waste was safely removed and returned to the country of origin.

Opposition to incineration and other such operations have been encouraged by the NGO Forum operating in Cambodia, and by a number of international organizations involved in the environmental sector.

HONG KONG, CHINA

Greenpeace China

Running Out of Time" – Urgency for Alternative Waste Management

"A strange sense of urgency hangs over the problem of waste disposal in Hong Kong... Unless action is taken quickly to identify new landfill sites, reduce waste loads and find new places to put constructive waste, rubbish could pile up on the street in a few short years."

(Hong Kong Government, Environment Hong Kong 2001, p.75)

Introduction.

Hong Kong disposed of more than 18,000 tons of waste at landfills each day in 1999, of which 9,300 tons was municipal solid waste (MSW) and 7,900 tons was construction and demolition (C&D) waste. Hong Kong has three strategic landfills in rural area operated since 1993, which served by seven regional, refuse transfer stations. A Chemical Waste Treatment Centre involving incineration process handles chemical waste. Import and export of waste has been controlled since 1996 and all hazardous waste imports are banned, even for recycling purposes. A memorandum of understanding put together in 1999 was signed by Mainland China in early 2000 on the cross-border movement of wastes.

Despite the strong 3R (reduction, reuse and recycling) rhetoric in its policy document, the Hong Kong Special Administration Region Government (HKSAR) utilizes every effect to convince the public to build mega landfill and/or incineration system to solve the waste problem.

Incineration Scheme.

Currently there is a "research" to incinerate MSW in order to achieve "waste minimization" and "optimum energy usage". It was packaged as a "research" which produces a raw material for manufacturing cement by incinerating MSW. The HK University of Science and Technology (HKUST) and Green Island Cement Company, a branch of Cheung Kong Infrastructure Holdings Limited owned by business tycoon Li Ka Shing, initiated the "research." The Government is very supportive and has already granted HK$ 9 million (US $1.15 million) to the project in April 2000.

A 4- month pilot test will begin early 2002; the incinerator will operate and burn around 40 tons of MSW. If the "research" proved to be "successful", the incinerator will have the capacity to burn 4,800 tons of MSW daily. In a document given by Green Island Cement, the system involves "a thermal treatment of MSW in a rotary kiln" and "the residue ash after the Co-Combustion process will become an integral part of the kiln dust which could be reused in cement manufacture…this will significantly reduce the amount and volume of residual ash to landfill."

On measures to control air pollution, the research claimed there would be effective elimination of dioxins and other pollutants.

"Dry Scrubbing process in the precalciner of the cement manufacturing system which coverts limestone into lime for further processing in the cement kiln. The massive amounts of limestone will be used as the main absorbing agent for the acidic gases from the thermal treatment process, which are precursors of dioxin formation. This combined with the high temperature of the process (up to 1,200 C for 4 seconds) will terminate any formation of dioxins. Dioxin emissions, if any, will be far below the statutory limit of o.1ng/Nm...A Fuel Gas Treatment (FG/T) system installed downstream of the process will include NO mitigation by ammonia injection, activated carbon injection for absorption of residual dioxins and heavy metals"

HKUST and Green Island Cement Co are now applying for an Air Pollution Control license from the Environmental Protection Department (EPD) in order to carry out the test. A public consultation period of 30 days will follow after the application for the license.

On the other hand, Cheung Kong Infrastructure Holdings Limited proposed mega landfill at the end of year 2000. The company proposed to build an artificial island for the deposit of both MSW and C&D waste.

Government Position.

It is obvious that the Government sees incinerator as *the* solution to the waste problem in Hong Kong, although the Government mentioned "sustainability" in many of its policy paper for both the environment and the society. There are many reasons why incinerator has become the Government's preference. First, the Government is very reluctant to build any more landfill because far better revenue can be generated for the Government if the land is not used for landfill. Second, the Government has never paid genuine effort to support community-based recycling scheme, not to mention providing financial support to the recycling industry. The Government simply does not see this as an option to the waste problem.

On defending the incinerator initiative, the Government always exaggerates the urgency of building another landfill or an incinerator immediately in order to solve the waste problem in time, threatening the public that otherwise "rubbish could pile up on the street in a few short years". For the public who does not have much information on all the evils that could be brought by burning waste, incineration seemingly is the most convenient and a "quick fix" to the problem.

Anti-Incineration Campaign.

Greenpeace China has been campaigning against the proposed incinerator project for the past 2 years and is the only green group involved so far. The local community, which lives near to the proposed site, has been very active in campaigning. A rally was co-organized by Greenpeace and the local community in May, which had 1000 participants.

In order to combat successfully against incineration, we need to highlight the availability of alternatives and its positive impact both on environment and the society's economy. Greenpeace

China has been working with Institute for Local Self-Reliance in the US, and will produce an Alternative Waste Management Study (AWMS) for Hong Kong. The problem in Hong Kong is our "waste collection" system is so convenient and efficient, therefore, the majority of the citizen do not realize the real situation. The AWMS report intends to bring the whole fact into light and propose feasible alternatives.

Moreover, Greenpeace China is a member of Green Collar Coalition that was set up in September 2000. The Coalition working with three labor groups is planning to carry out pilot projects to try out recycling via local network in the community.

GUAM (USA)

Recycling Association of Guam

In our report from last year at our first Anti-incineration Alliance conference in Bangkok I explained how the incineration issue in Guam came about. To refresh your memory let me repeat some highlights:

In 1982 the Government of Guam issued an exclusive license to build an incinerator to a company called International Energy Enterprises Inc. In 1989 the island's master plan included an incinerator, but Energy Enterprises sold its license to G Power, who teamed up with Wheelabrator Technologies and formed a partnership with a local company called GMP and Associates, which created a company called Guam Resource Recovery Partners or GRRP. As explained before, Guam's current Governor, who was a senator during these times, is rumored to have links to GMP and Associates. In 1991 the Guam Economic Development Authority agreed to sell $75 million in bonds to fund the incinerator project and in July 1996,without going to the required bidding process a contract was signed between GRRP and the governor's office.

All this happened without legislative approval and consequently Guam's Senators passed a law blocking public funding. This issue has become a political "hot potato" and has been "bouncing back and forth between the Governor and Senators. One Senator has filed a lawsuit against the Governor claiming that the contract was illegally obtained and this is scheduled to go to trial in September of this year.

However the president of GRRP, in a recent interview stated that his company plans to go ahead with the incinerator project because as he states: "We have a valid contract" and is awaiting approval for the bonds to pay for the project. Guam's Governor stated, that if we (Guam Government) don't they (GRRP) may sue us. Either way some people will end up making a lot of (taxpayers) money on this. The downturn in Guam's economy might also have an impact and maybe a blessing in disguise. Guam's economy is fueled by tourism, mostly from Japan and U.S. military. The decline in tourism, due to the faltering Asian economy and downsizing of U.S. military bases is having a very serious economic impact on Guam and the government especially has serious money problems.

We feel that our group has made a positive impact on this issue thanks to the many informative e-mails, which we have been getting from Neil and our allies. Several of these reports, which I feel are relevant to the Guam issue, are being forwarded to most Senators and others in our community and we have gotten several favorite responses. Almost all of Guam's 15 Senators now oppose incineration and we also have a strong allay in Guam's local newspaper, the Pacific Daily News.

In the meantime the closing of Guam's only public dump and the opening of a new sanitary landfill has been kept "hostage" by the controversial contract, since a landfill is part of the contract with GRRP. Guam`s landfill reached full capacity in 1997 and was supposed to be closed. It was also listed among the nation`s worst toxic public dumps. But it is still in operation and has grown to a mountain about the height of a 3-storey building!

Our small group has been actively promoting recycling and composting since 1988. We have provided information through our newsletter about the realities of incineration; expense, forced feeding, destruction of natural resources, dioxin creation, threat of emissions and ash toxicity, etc. But efforts to implement recycling have failed and we feel that Guam's Government purposely undermines recycling and composting as this could have a negative effect on the proposed incinerator. Again our Governor is a strong supporter and unfortunately so is the Guam EPA Administrator (a political appointee). He has publicly stated, that "the incinerator is a near term solution."

There is a law in place for the government to recycle office paper, but there is no compliance. The limited recycling that is being done is mostly voluntary. The implementation of tipping fees in 1999 has helped somewhat in recycling but has also caused in increase in illegal dumping. The public dump also stopped accepting white goods such as stoves, refrigerators, a/c units and tires and car batteries. These happen to be the same items an incinerator would not accept. Residents now have to pay a disposal fee to a local recycling company for shipment off-island. But this has again, also caused in increase in illegal dumping.

Another recycling company recently started accepting cardboard mostly from larger businesses in order to reduce their tipping fees. However, the same company was also hoping to recycle white office paper from out local Government since there is a market demand for this. Unfortunately, the government seems unwilling to co-operate and this paper continues to go to our "over-capacity" dump in defiance of the law. A few places buy aluminum cans for 20 cents a pound but only a small percentage is delivered to the recyclers. Most cans end up littering beaches, parks and roads and parking lots. About 1850 metric tons of cardboard is now recycled annually as well as an estimated 200 tons of aluminum. Along with scrap metals and tires we estimate that over 15% is now being diverted from the dump.

We have also been unsuccessful so far to get a so-called "bottle-bill" introduced for refundable deposits on beverage containers. Guam's beverage wholesalers and large retailers oppose such a bill. Again political pressure is suspected. Also, most Senators are reluctant to introduce an unpopular law such as advance deposit fees or mandatory recycling as this might cause them to loose votes in the next election.

As a small island community, it seems obvious to our group that our environment is much more at risk than larger land masses. Our air, water and land are affected by the imported community discards, which result from our life-style. Sadly, we are addicted to our consumptive, throwaway western attitude and will only respect our environment when it becomes too late.

Unlike the Government of Guam, the US military at Anderson Air Force Base continues to operate a successful on-base recycling program. Last year this program diverted 3.2 million pounds from their sanitary landfill. They have recognized the fact that a landfill is an expensive project and the more they divert, the longer their landfill will last. Our neighboring island to the North, Saipan has also recognized this fact and has recently introduced a bill for advance deposal fees. But there have also been talks of incineration on Saipan and we will continue to monitor this.

Besides the trash issue, Guam has also many other environmental problems. The island's sewer system is in a state of disrepair and has been overflowing raw sewage on streets and into the ocean thus polluting some of Guam's pristine beaches, which our tourist come to enjoy. It is also threatening Guam's delicate aquifer and has caused some wells to be contaminated.

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Then there is Guam's main power plant, which has been exempted from the U.S. Clean Air Act and is burning low-grade high sulfur fuel and emitting high polluting emissions into the air. As part of the U.S. Guam is supposed to follow vehicle emission controls but there is none. And one can see many buses and trucks billowing black smoke while our local EPA office claims to be under budgeted, understaffed and overworked.

On top of this, there is frequent uncontrolled backyard burning at residences. And even though illegal, there is no enforcement. Reporting these and other violations to the Guam EPA office has proven useless as we always get the same excuse: "We're understaffed or under funded". They are more concerned with regulatory procedures than enforcement.

In conclusion and going back to the incinerator issue it seems that at least Guam must be holding the world record on a proposed incinerator project that has been in the making for almost 20 years!

Note: a short slide presentation will follow this report.

INDIA

Disha, Thanal and Toxics Link

The Indian waste management scenario continues to be grim, even though there have been some commendable initiatives by scattered individuals, groups and NGOs. There is an increasing realization that solution which does not address at-source reduction, segregation and community level implementation is uneconomical and unsustainable. But the Government is trying to deal with the waste management problem with end-of-pipe technological interventions due to pressures from international funding agencies, multi-national companies, their Indian and foreign consultants.

In this context one should state that India is a diverse country, too dispersed and many regions are not at all represented in the Waste management discussions and actions. There is also lack of understanding of the waste issue in the India context

Municipal Waste Management – Status

It is estimated that India produces 36.5 million tonnes of municipal waste every year. The urban local bodies spend approximately Rs. 500 to Rs. 1500 (approx. USD 12 – 36) per tonne on solid waste for collection, transportation, treatment and disposal. About 60-70% of this amount is spent on collection, 20-30% on transportation and less than 5% on final disposal. Out of the total municipal waste collected, on an average 94% is dumped on land and 5% is composted. The socio-economic structure of our society not only makes per capita generation of waste much less compared to that of the western societies, it has also brought in a system of waste recycling and reusing not common in developed societies, though these systems are fast loosing ground. A substantial amount of MSW is recycled and reused through the primary intervention of ragpickers and second-hand markets, though there are problems like the health hazard to the ragpickers and the degradation and devaluation of the recyclables.

Garbage management was not a major headache for the home or for the civic authorities till the 1980's. But the changing life styles, loss of the organic nature of waste, growing population of towns and cities and urbanization of villages have all been reasons for this growing waste menace and today no town is devoid of the heaps of garbage piled up on street corners and road sides and the total hygiene of the people and the environment has been mindlessly compromised. The simple ways of the older generations are only of antique value and even as people remember how good the

good old days were, there are only too few who learn lessons from them as to how it would be easy to manage our own waste and the attitudes that create them. Today, the people and the civic authorities want some way out of this mounting crisis and hence ideal time and ground for the vendors of the big machines (mostly burning systems) to come and market them here.

As of today, open dumps are the major cause for people's ire and incinerators are being flaunted as one of the solutions to this issue. But the voluntary groups have been quite effectively able to thwart any major move towards a shift to incinerators for the MSW management. Even then, many States already have some kind of burning systems like incinerators, pyrolators, pelletisation etc. Many Waste-to-Energy plants have come up, not all of them doing primary burning.

There is a biomethanation plant and a pelletization project already completed in Andhra Pradesh. This State is executing three other WTE projects, which is to produce 23.3 MW of power totally from garbage. Maharashtra (4 MW), Uttarpradesh (13 MW from 2 projects) and TamilNadu are the others who have WTE projects under various stages of implementation. The WTE plant at Perungudi, Chennai (TamilNadu) is being implemented by the Australian Company Energy Development Limited (EDL). This is sort of a demonstration project and the company has been concertedly trying to get other States to take up their proposal. The process is gasification and is based on the SWERF technology (whatever that means!). There have been some protests over this plant and the company is going ahead with the implementation, inspite of the uncertainties over its proper functioning and almost certain residual pollution possibilities due to the unsegregated nature of the input garbage. Zen Global Finance Ltd, Enkem Engineers Ltd, Future Fuels Engg (India) Pvt Ltd, Global Environment Engineering Ltd, Thermax Ltd, Excel Industries and EDL are some of the major WTE technology companies in India.

USAEP have been promoting technologies for waste management and off late they have been trying to sell Plasma Arc Technology especially for Startech Environmental Corporation. Many state agencies have been showing interest in these technologies but prohibitive cost seems to be the only deterrent stopping them from buying these technologies. The Netherlands government has provided support for an incinerator at the Cochin Shipyard in Kerala State.

The Ministry of Non-Conventional Energy Sources (MNES) which has been so long promoting innovative and ecologically sustainable alternatives in energy production like solar and wind power have started showing interest in promoting and supporting WTE projects. They have offered subsidies, lucrative enough for the WTE companies. Demonstration projects of this nature has been offered 50% subsidy on project cost to a maximum of 3 crores per MW. This is alarming considering the fact that all these WTE projects could be some form of thermal processes, new fond technologies in their demonstration state only and hence cannot be scientifically certified or validated as being non-pollutive ones. The MNES policy could well burn up public money and needs to be specifically addressed.

The same MNES had earlier found in a survey that composting has best prospects for MSW management in the Indian context while burning technologies are not economically viable for both waste management as well as energy recovery.

Very good waste management aiming at a near Zero-waste philosophy with composting as a most suitable method has been taken up by many individuals, voluntary groups, community groups, government agencies and also the private companies. Many of the individual and community efforts have found success not only because of the community participation but also because of the emphasis on at-source segregation, better individual responsibility and the relatively smaller scale of operation. The City farming concept as practiced by Dr. R T Doshi in Mumbai, RISE of Bangalore, Advanced Locality Management groups in Mumbai, Stree Mukti Sanghatana in

Mumbai, CEE's initiatives in Bangalore, Exnora International in Chennai, Vatavaran and ACCORD of Delhi all work on community participation and are some of the success stories of decentralized, sensible waste management. The Karnataka Compost Development Corporation owned by the Government have been doing composting on a municipality scale since 1976 and still continues to do so. The Excel Industries is promoting anaerobic composting in India and they have a number of project plans in Andhra Pradesh, Mumbai, Ahmedabad, Rajasthan, Madhya Pradesh. They already have plants at Calcutta, Bhopal, Gwalior, Malad and Thane (both in Mumbai) and in Trivandrum and Calicut (both in Kerala). But the plant in Trivandrum (Kerala) drew massive and violent protests from the local community because it was polluting their air and water. The local government now wants this to be closed down. This is an example of how even un-segregated composting if done in a centralized, large scale could be detrimental to the health of the people and the environment.

At the national policy level, the Ministry of Environment and Forests has recently legislated the Municipal Waste Management and Handling Rules, 2000. This law details the practices to be followed by the various municipalities for managing urban waste. According to the law incineration may be used in specific cases. Waste to be incinerated shall not be chemically treated with any chlorinated disinfectants and chlorinated plastics shall not be incinerated.

However the law does not address mechanisms, which will be needed, for promoting recycling or reducing or provide for any community participation, despite the fact that the Rules have been an outcome of public pressure and the immense work done by NGOs and community groups. This indigenous process of the ragpicking networks and second-markets deserves to be developed towards implementation of the principle of 3Rs and does not find a place in the law.

The government has also banned the use of recycled plastic and non-permissible colour in production of polybags for food packaging. Production of polybags less than 20 microns has also been banned. But this actually increases the use of more virgin plastics. Although the polybags constitute 5% of the total volume of MSW, the municipalities are being awfully disturbed by the havoc created by the polybags. Many of the municipalities are seeking legal provisions to ban them.

The concept of Zero-Waste societies, which is a goal and path we have embarked on, is still a dream. But there are some projects in India, by community and voluntary groups, which aim towards implementing this dream. The Zero-Waste Kovalam project undertaken by Thanal and Greenpeace supported by GAIA and WNA is one such demonstration project and is being looked forward to as a worthy experiment and experience.

Bio-Medical Waste Management – Status

A few years ago little concern was observed among the hospital managers regarding risk of hazardous waste generated at different hospitals, nursing homes and pathological centers. This waste found its way to the general waste stream threatening contamination of the whole of the waste. Moreover a good amount of contaminated materials before or after coming into the waste stream found their way to the second market risking people's health and life. Of late concern for safe disposal of medical waste has been expressed from various corners. Srishti – an NGO based in New Delhi was the first to address this concern and have been responsible in making effective changes in looking at and handling Bio-medical waste in the country. Of the many initiatives on a national level they have been instrumental in getting the Government to enact the Bio-Medical waste (Management & Handling) Rules, fixing standards for technologies used, getting a ban on incineration of chlorinated products etc. As per the rules, segregation has become mandatory, which itself solves half the problem. In spite of its many limitations, which have come to light at various stages of implementation, the Rules, if followed, could be a useful tool for segregation of

bio-medical hazardous waste at their generation point and their subsequent disinfecting and disposal. But most of the State Pollution Control Board's who have been authorized to implement the rules have either done a very bad job mostly due to ignorance or have twisted the provisions of the rules and are forcing hospitals to install incinerators, as a mandatory requirement, which is actually not the case.

The campaign by NGOs for cleaner and safer medical waste management led by Srishti have successfully brought such key factors as dioxin as a major concern and incineration is now spoken of with caution and restraint. The World Bank is apprehensive about funding Medical Waste Incinerators. Apart from Srishti, there are other groups working on medwaste. The Jyotsna Chauhan Associates (JCA) is one such NGO from Andhra Pradesh. They were instrumental in getting the Andhra Pradesh Pollution Control Board to take very progressive leaps in implementing the rules and was the first state to ban on-site incineration. Now there is a serious lobbying by the MedWaste groups to get a national ban on the same.

Model hospitals, both individual as well 11 WHO funded ones are implementing the Rules, even though some of them are still not able to meet the requirements of the rules. Centralized facilities in three cities are being operated or are near operating through private sector. The International Aid agencies Ausaid, OECF, CIDA, NORAD, besides USAEP are eyeing India on this issue. The Asian Development Bank has recommended funding for Medical Waste Incinerators for Karnataka and this is a very recent concern.

Meanwhile Srishti, Toxic link, MMAG and Thanal had conducted separate surveys and studies in hospitals in New Delhi, Chennai, Mumbai and Kerala respectively. All these studies point at the worsening situation with regard to the growing incinerator menace and all the more points out to the massive public health crisis that would be precipitated if on-site incinerators were continued to be allowed. Thanal is releasing their report in the WNA meeting at Taipei. In the state of West Bengal DISHA conducted preliminary survey on the status of Bio-Medical Waste Management in a few hospitals. Though the immediate threat of installation of incinerators through implementation of World Bank project in the post 1996 period had been averted through protest movement, the fact remains that the sorry state of management of bio-medical waste leaves a favorable ground for ignorant and/or interested sectors to advocate incineration as a possible solution.

A Medical Waste Action Group has been formed and Srishti has activated a list serve of South Asian Medical Waste Groups.

There are some concerns, which need to be addressed now – the most important one seems to be the International agencies funding incinerators – NORAD, ADB etc. The World Bank though not openly, says it will be `client' driven. The MoEF Rules do not have emphasis on waste minimization and do not address purchase policy matters. The Problematic disposal policies of agencies like UNICEF, WHO carrying out large-scale immunization programmes also needs to be addressed. The outreach capacity of the few NGO's and individuals who are working in this area is limited and there are many States where we do not know at all what is happening in this sector.

Hazardous Waste Management - Status

The High Powered Committee (HPC) on hazardous wastes constituted by the Supreme Court of India in 1997 under the Public Interest Litigation filed by the Research Foundation for Science, Technology and Ecology (1995) recently submitted its report to the apex body, highlighting the state of India's hazardous waste management. In the Chairman's foreword, Prof M G K Menon noted that "situation in regard to hazardous wastes in the country is grim. It particularly affects the groundwater systems of the country and remediation is very difficult and expensive. It affects a

large number of innocent people, workers as well as community, who have to pay for the sin of others."

Government apathy towards managing hazardous wastes is apparent from the fact that there is no reliable data available on the quantum and nature of hazardous wastes generated in the country. In the last three years, the Ministry of Environment and Forests have reported four different figures on the quantum of hazardous wastes generated - 0.7 million tones (MT)/ annum in 1997, 9 MT/annum in Jan'2000, 8 MT/annum in Feb'2000 and 4.4 MT/annum in May 2000.

Though the figure is incomplete, the approximate number of hazardous waste generating units in the country is 13,011, out of which 11,138 are authorized and 1873 are illegal according to the HPC report.

The situation is alarming as far as the disposal of these wastes is concerned, to say the least. Due to lack of any infrastructure, both due to government's negligence and industry's lack of concern, hazardous wastes is finding its way: along the roadside, in low lying areas, along with the municipal refuse, on river/canal beds and in empty spaces within industrial estates.

The State Pollution Control Boards of Gujarat and Andhra Pradesh have reported that they have more than 40 illegal hazardous waste dumps in their states. This could well be the condition in the rest of the States as well. According to the HPC, there are about 116 industrial incinerators in the country. Gujarat leads the race with 30, Andhra Pradesh has 20, Maharashtra-16 and Tamil Nadu-10. Most of these are merely "combustion chambers or industrial boilers where the maximum temperature is around 500-550 degree Celsius". This is of particular concern since dioxins and furans, two most deadly toxins produced during burning of chlorinated compounds, ideally form between the ranges of 400-600 deg. Cel. The types of wastes being burnt in these incinerators include wastes from oil refineries, pesticides, drugs, petrochemical. All of these wastes contain chlorine.

Possibilities of Developing National and Regional Network

Growing concern among the NGOs and local communities regarding necessity of following the principle of 3Rs has created a ground to sow the idea of Zero Waste Society. Interactions and exchanges are already taking place. Possibilities of spreading the zero waste moral in the grass root level have become very conspicuous. But still at this stage the concerned NGOs must play the pioneering role. They have to take the responsibility for intervention. The necessity for developing joint platform and effective cohesive network is now obvious.

But we have to keep the reality in mind. Most of the NGOs are unable to interact nationally due to very many reasons. Forming regional level network may help develop coordination among the local groups who are active on waste issues. The process will ensure the developing and strengthening of the national network. Efforts are already on in these lines.

JAPAN

Dioxin Pollution Kanto Network

"No Burning/ No Land-Filling Movement: Present Situation in Japan."

1.Achievement of Stop Dioxin/Anti-Incineration Movements;
The movement against the installing of modern waste incinerator started in 1960th at various sites in Japan. In particular, so called, "SUGINAMI Waste Struggle", started in 1966 in SUGINAMI Ward, Tokyo, against the burning of urban wastes at SUGINAMI incinerator, is well known for the long struggle over 16 years including that in court. It ended by the resolution at the court leading to the most strict agreement for pollution prevention ever concluded in Japan. Thereafter, installing of device to prevent pollution such as waste gas (HCl or NOx) control device, electric dust-collector, etc. became mandatory. In 1983, Dr. Ryo Tachikawa found high level of dioxins and mercury in the ash of incinerators, which became the headline news. The news flared up the anti-incineration movements in Japan.
Fujiwara, the speaker today, has been involved in the anti-incineration movement from late 1970th since he came to know that the hazardous chemicals such as HCL, lead or cadmium are being released into air and water by burning wastes. After the report of dioxins and mercury found in incinerators, I have been fighting against incinerators claiming that it is as dangerous pollution source as nuclear reactors. However, as Japanese government policy has been 100% burning of the combustible city wastes, there has been the construction of incinerators one after another. Furthermore, the size of the incinerators became huge, and some of them have capacity to produce electricity. The number increased as well, and by the middle of 1990th, it has reached almost 1900. If we include those for industrial wastes and for home use, it may reach some hundred thousands. In addition, with the conclusion of London Treaty and Basel Treaty, we forsaw more construction of incinerators to manage ever increasing wastes and we had to step up our struggles.
In order to stop incineration, it is quite effective to appeal to the public concern by focusing on the danger of dioxin. As the 14th International Conference on dioxin was held in Kyoto in 1994, we organized a citizen's campaign in Kyoto, which lead to the formation of "Stop! Dioxin Pollution, Kanto Network." In October 1995. Dioxin pollution from open-air burning of industrial wastes and from incinerators started to draw public attention all over Japan, and we have recognized that Japan is the worst. No.1 country in the world in respect to the number of incinerators and dioxin pollution of mother's milk, fish/shellfish, or urban air. Pressured by the campaign to stop dioxin pollution by various NGOs together with researchers, the congress passed a law, "Special Measures to Prevent Dioxin Pollution" in July 1999, presented by the majority of the congress members of various parties. Prior to the proposal of the law, government formed "Inter-ministrial Committee for the Prevention of Dioxin Pollution" which has set the following 8 points as "The Guideline for the Measures to be Taken to Prevent Dioxin Pollution."
1)Revision of TDJ. and other standards. 2) Promotion of the Measures to Reduce the Release of Dioxin. 3) Improvement of the Monitoring Systems on Dioxins. 4) Survey of the Effect of Dioxin on Human Health and Environment. 5) Promotion of the Research and the Technical Development. 6) Promotion of Waste Treatment and Recycling. 7) Providing/ Opening of Appropriate Information to the Public.8) International Cooperation.

Severe Situation of Dioxin Pollution in Japan

Around the time of setting up the new law, severe situation of dioxin pollution have been found in various places in Japan. In 1998, in the incinerator in the NOSE town, OSAKA, 52 million pg-TEQ/g dioxin was detected from the soil around the cooling water tank, 3 billion pg/L contamination in the water to remove HCl from the smoke, 130million pg/L in the remaining water of open-air cooling system, 91 million pg/g in the accumulated ash. These extremely high level of contamination are alarming in comparison to the cases would wide. From the blood of workers of the incinerator, max. 805pg-TEQ/g fat of dioxin was detected by the government check. Also, max. 5380pg/g fat (later, govt. corrected to –1000pg) of dioxin was found in the blood of workers who have been engaged in the pulling down of the polluted incinerator. This incidence lead to the enactment of new law to prevent the exposure of the workers to dioxins.

3.Let's Promote the No! Incineration / No! Land-fill Movement to Eliminate Dioxin Pollution
Instead of stopping or phase-out of incineration, Japanese Government has been taking the policy of 24hrs continuous operation of incinerators, widening of the waste-collecting area, and the use of larger incinerators. Also, our government id promoting newly developed technology such as high temperature liquifying incinerator or gasification incinerator, the safety to be examined. The dependence on incineration is opposite to the zero-emission policy for the formation of reuse/ recycling society, and is the worst selection for the future in producing remaining / flying ash in large amount which contains dioxin and heavy metals. In the past, we have bitter experience of finding dioxin and heavy metals in the ground water which were contaminated from the buried ash of the incinerators, and spreading of contamination by the refuse of the ground which have been used for final burying of ash. If we continue this policy direction, Japan would continue to be notorious country for producing most of dioxin in the world.
We would like to change this direction by the cooperation of people's power, and stop dioxin pollution world-wide.

KOREA (SOUTH)

Korean Waste Movement Network

Korean Waste Problem:

The Generation of the Problem and Civil Society's Counter Action

1. Waste Management in Korea

1.1 Waste Management System

＊Waste Classification in "Waste Management Act"

- In Korea, waste is roughly classified into two categories according to its source of origin: municipal waste from households and industrial waste from business sites or factories of large scale

- Industrial waste is further divided into two categories: general industrial waste which consists of slag, ash, dust, and construction waste, specified waste which consists of toxic wastes such as waste acid, waste alkali, waste oil, waste organic solvent and so on.

＊Waste Management System

- In Korea, waste is managed in a dual system. The local government is responsible for the final

disposal of municipal waste, while the discharger is responsible for the final disposal of industrial waste.

- Municipal waste is managed by the volume-based waste collection fee system. This system was introduced nationwide in 1995 in an attempt to encourage the citizen's voluntary reduction of waste by charging fees in proportion to the amount of waste discharged. Municipal waste management by the volume-based waste collection fee system is as follows.

□ Municipal Waste Management Process through Volume - Based Collection Fee System

□ Discharge

· The discharger buys a designated plastic bag for collecting waste at stores, puts the waste inside and places the bag outside.

· The 5 recyclable products are not to be put in the bags, but to be put aside separately.

· Since recently, food waste must be thrown away separately through food waste bag or containers.

□ Collection·Disposal

·The bags filled with waste are collected and moved to incinerators or landfills by municipal vehicles. Bags other than designated bags are not collected.

·Separated recyclable products are sent to recycling companies.

- Recently, the Korean government intends to introduce the EPR (Expanded Producer Responsibility) system, imposing on manufactures the responsibility to collect and recycle recyclables, in an attempt to efficiently manage waste.

1.2 Waste Generation in Korea

- After the 1990s, the generation of municipal waste has been steadily decreasing while that of industrial waste has been on a steep rise.

<Table 1-1> Trends of Waste Generation

(Unit: thousand tons/day)

Classification		'92	'93	'94	'95	'96	'97	'98	'99
Total		144.5	141.4	147.1	148.1	180.8	194.7	188.6	219.4
Municipal waste		75.1	62.9	58.2	47.8	49.9	47.9	44.6	45.6
Industrial waste	Sum	69.4	78.5	88.9	100.3	130.9	146.8	144.0	173.8
	General	48.0	56.0	85.2	95.8	125.4	141.3	138.7	166.1
	Specified	21.4	23.4	3.7	4.5	5.5	6.1	5.3	7.7

- A notable characteristic of the municipal waste generation in Korea is that the percentage of packaging waste and food waste is very high ,

- Packaging waste, which accounted for % of the total municipal waste in 1999, has been increasing continually. The percentage of plastic packaging material of the total packaging is high

and is expected to be higher in the future. The great generation of packaging waste results from the rise in consumption in proportion to the rise in income levels. Food waste accounted for 27.1 % of the total municipal waste in 1999. We think that the large generation of food waste is caused by the Korean food culture that prefers a rich dining table.

<Table 1-2> Trends of Food Waste Generation

(Unit: ton/day)

Classification	'95	'96	'97	'98	'99
Food waste generation (tons/day)	15,075	14,532	13,063	11,798	11,577
Percentage in food waste in municipal waste (%)	31.6	29.1	27.3	26.5	27.1

1.3 Waste Disposal in Korea

- Both the percentage and the quantity of the nation's waste being dumped into landfills are dropping rapidly; conversely, an increasing volume is being recycled. The percentage of the volume of waste incinerated is also on a steady rise.

- Especially, thanks to the Volume-based Collection System, the ratio of land filled municipal wastes has dropped rapidly while the recycled ratio rose as much.

<Table 1 - 3> Disposal of Waste

Unit: ton/day

Classification	1993	1994	1995	1996	1997	1998	1999
Municipal Waste							
Total	62,940	58,118	47,774	49,925	47,895	44,583	45,614
Landfill	54,227	47,116	34,564	34,116	30,579	25,074	23,545
Incineration	1,480	2,025	1,922	2,725	3,409	3,943	4,675
Recycling	7,233	8,927	11,306	13,084	13,907	15,566	17,394
General Industrial Waste							
Total	55,969	85,229	95,823	125,409	141,305	140,406	166,114
Landfill	17,573	29,109	31,203	35,730	43,480	35,401	29,856
Incineration	1,045	3,912	5,691	6,503	6,884	7,260	7,616
Recycling	37,351	52,208	58,929	83,176	90,941	93,529	122,231
Dumping at sea	-	-	-	-	-	4,216	6,411
Specified Waste							
Total	-	-	4,389	5,238	6,074	5,266	7,488
Recycling	-	-	2,140	2,433	3,110	2,822	3,759
Incineration	-	-	690	704	1,071	967	1,277
Landfill	-	-	219	381	592	466	718
Others	-	-	1,340	1,721	1,301	1,011	1,734

2. Incineration Problem in Korea

2.1.The Government Policy for Incineration

- Korea's industrialization has been lead by the centralized government power. Korea was industrialized in the 60s under the central government's economical dictatorship, and in the 80s became a mass-producing, mass consuming society, and therefore increasing the amount of waste generated. The government chose the easy solution to this problem and decided to burn or bury the waste.

- In most of the cases in Korea, the local government receives a 20-30% support from the central

government for the building of incinerators. The local government then places an order for construction work and companies participate in the construction.

- The local government pays for the incinerator working expenses. Most of the incinerators are run by private companies in the form of management entrusted by local government, but some are directly managed by Environmental Management Corporation, which is a state policy corporation for construction, operation and management of fundamental facilities, and the local government. Even if there is an increase in incinerating expenses, it can be made up for by taxes, and therefore no incinerator has been stopped because of a deficit. This is a very significant Korean trait. The Korean government's leading power is traditionally very strong.

- On the other hand, mainly private waste disposal companies have incinerated industrial waste.

- According to the First Comprehensive Plan for National Waste Management (The Amendment Plan: 1996 - 2001), the Ministry of Environment plans to increase the ratio of waste incinerated to 20% for municipal waste and 12% for industrial waste. The plan also indicates that one municipal waste incinerating facility be built in each basic local government.

2.2 Regulations for Incinerator

- In order to deal with the objections of the residents who live near the incinerator construction sites, the Korean government enacted the Act for Promotion of Waste Treatment Facilities and Local Community in 1995 and formed a Resident Support Fund to counterbalance the residents' disadvantages in having the facility in their area. The government also guaranteed the participation of the residents in the process of location selection and management of the facility.

- The Waste Management Act regulates the amount of dioxin emitted by municipal and industrial waste incinerators. It is a result of citizen campaign that regulations were made for municipal waste incinerators in 1997.

·On 1997.7.19, regulation of dioxin emission was implemented for large capacity municipal incinerators with a capacity of over 50ton/day.

·The regulation was enlarged to all incinerators with a capacity of over 0.2ton/hour(4.8ton/day) starting this year .

<Table 2 - 1> Standard Dioxin Emission of Incinerator (an Excluding of Municipal Waste Incinerator over 2 ton/hour)

(Unit: ng-TEQ/N)

Facility / Capacity	New Incinerator	Operating Incinerator	
		From 2001.1.1 to 2005.12.31	After 2006.1.1
Over 4	0.1	20	1
From over 2 to below 4	1	40	5
From over 0.2 to below 2	5	40	10

<Table 2 - 2> Municipal Waste Incinerator over 2 ton/hour

(Unit: ng-TEQ/N)

Constructing in 1997. 7.19 or Constructed after in 1997.7.19	Constructed Incinerator before in 1997.7.19	
	To 2003.6.30	After 2003.7.1
0.1	0.5	0.1

2.3 The Present Status of Incinerator Facilities

□ General Outline

- As of 1998, there are approximately 14,791 incinerating facilities nationwide. 14059 of them, 95%, are small capacity facilities of less than 100kg/h.

<Table 2 - 3> Operating Incinerator Facilities (1998)

Classification	Total	Below 100kg/hr	100kg/hr	200kg/hr	Over 2 ton/hr
Total	14,791	14,059	286	353	93
Municipal Waste	4,529	4,317	136	63	13
Industrial Waste	10.262	9.742	150	290	80

□ Municipal Waste Incinerator Facilities

- After an 830 billion won (about US $ 0.69billion) investment, at the end of the year 2000, there

are 19 facilities (6,500tons/day) running.

- As of the end of the year 2000, 14 facilities are under construction, and the estimated cost is approximately 60 billion won. (About US $ 0.5billion)
- Most of the municipal incinerating facilities are stocker type, and were built with European and Japanese technology support.

- * Incinerator Facilities supported by Japanese technology: 15
- * Incinerator Facilities supported by German technology: 7
- * Incinerator Facilities supported by French technology: 1
- * Incinerator Facilities supported by Danish technology: 4
- * Incinerator Facilities supported by Belgian technology: 3

* Incinerator Facilities supported by Swiss technology: 3

<Table 2 - 4> Constructed Municipal Waste Incinerator

Location	Capacity (Ton/day)	Construction Term	Construction Cost (million won)				Construction Company	Operation Company
			Total	National	Local	Private		
19	6,550		830,102	89,664	484,303	256,135		
Nowon Gu in Seoul	400×2	'93.8-'97.1	64,666	0	64,666	0	( )	
Yangcheond Gu in Seoul	200×2	'92.12~'96.2	31,892	244	31,648	0	SK ( ) ( )	SK ( )
Dadae Gu in Pusan	200×1	'93.8~'95.8	21,478	1,092	15,101	5,285		
Haeundae Gu in Pusan	200×1 200×1	'94.~'96. '96.~'97.	30,142	553	22,968	6,621	( ) ( )	
Seongseo in Daegu	200×1 200×2	'90.~'92. '93~'98	72,252	8,201	54,846	9,205	( ) ( )	
Daedeok in Daejeon	200×1	'95.7~'98.10	36,669	5,338	23,362	7,969	LG ( )	
Sangmu in Kwangju	200×2	'96.6~2000.9	71,312	-	29,035	42,277	SK ( )	SK
Ulsan	200×2	'97.6~2000.5	60,968	18,290	42,678	-		
Poungchon in Anyang	200×1	'91,11~'93.12	18,721	1,446	3,375	13,900	( )	
Ilsan in Koyang	300×1	'92.11~'95.11	29,579	1,845	4,305	23,429	( )	
Jungdong in Bucheon	200×1	'92.12~'95.5	33,381	1,347	12,893	19,141	( ) ( )	( )
Daejang in Bucheon	300×1	'97.9 2000.9	65,680	17,248	48,432	-	( ) ( )	( )
Seongnam	300×2	'94.12~'98.10	49,750	0	0	49,750	( )	
Kwangmoung	150×2	'96.3~'99.12	48,305	10,729	27,959	9,617	( )	
Yongin	100×1	'95.12~'99.2	18,627	1,237	17,390	0	( )SANKI	
Suji in Youngin	70×1	'97.7~2000.3	23,740	-	-	23,740		
Suwon	300×2	'96.7~'99.10	82,292	5,790	31,301	45,201	( )	
Kwacheon	80×1	'96.8~'99.10	18,218	3,600	14,618	0	( )ABB	
Changwon	200×2	'93.~'95. '97~2000	52,430	12,704	39,726	0		

<Table 2 - 5> Constructing Municipal Waste Incinerator

Location	Capacity (Ton/day)	Construction Term	Total Construction Cost				Construction Company
			Total	National Treasury	Local Treasury	Private Investme	
14	3,650		607,688	117,088	368,502	122,098	
Kangnam in Seoul	300×3	'94.12~ '99.12	106,080	14,402	91,678	-	( ) ( )ABB
Moungji in Pusan	200×2	'96.10~ 2000.10	53,600	13,432	37,520	2,648 ( )	( )
DaeDeok in Daejon	200×1	'98.11~ 2001.3	20,072	6,021	14,051	-	( )
Incheon	250×2	'98.12~ 2001.11	85,071	25,521	59,550	-	( )
Kunpo	200×1	'97.8~ 2001.5	40,300	-	-	40,300	( )
Ansan	200×1	'96.4~ 2000.11	36,150	-	-	36,150	( )
Kuri	100×2	'98.9~ 2001.10	50,905	12,705	38,200	-	( )
Ujeongbu	100×2	'95.6~ 2001.12	42,937	12,881	30,056	-	( ) SK ( )
Paju	100×1	'98.12~ 2001.7	26,024	6,471	19,553	-	( )SANKI
Cheonan	200×1	'98.12~	31,396	9,419	21,977	-	
Kimhae	200×1	'98.12~ 2001.6	45,000	-	2,000	43,000	( )ABB
Tongyoung	50×1	2000.11~ 2002.10	9,120	2,736	6,384	-	( )SANKI
Sanpuk in Jeju	100×2	'99.6~ 2003.12	39,781	9,000	30,781	-	( ) ( )
Sannam in Jeju	100×1	'99.6~ 2003.12	21,252	4,500	16,752	-	( ) ( )

- Total Dioxin Emission from Incinerator
- The Problems of Incinerator Construction and Management in Korea
- Municipal Waste Incinerating Facilities

<Table 2 -6> Estimated Dioxin Emission Quantity

Classification		Below 0.2ton/hr	0.2 - 2ton/hr	2-4ton/hr	Over 4ton/hr
Municipal Waste Incinerator	Incinerated Quantity	109,000	37,000	-	773,000
	Density	89.367	20.633	-	0.051
	Annual Total Emitted Quantity	44.228 g-TEQ/year	3.883 g-TEQ/year	-	0.191 g-TEQ/year
	Ratio of Emitted Quantity(%)	91.57%	8.04%	0	0.38%
General Industrial Waste Incinerator	Incinerated Quantity	418,000	348,000	330,000	1,150,000
	Density	84.011	7.263	15.837	
	Annual Total Emitted Quantity	181.026 g-TEQ/year	16.213 g-TEQ/year	28.776 g-TEQ/year	100.279 g-TEQ/year
	Ratio of Emitted Quantity(%)	55.48%	4.97%	8.82%	30.73%
Specified Waste Incerator	Incinerated Quantity	46,00	87,000	153,000	26,000
	Density	23.388	8.530	48.260	
	Annual Total Emitted Quantity	7.666 g-TEQ/year	4.894 g-TEQ/year	50.692 g-TEQ/year	8.614 g-TEQ/year
	Ratio of EmittedQuantity(%)	10.67%	6.81%	70.54%	11.98%
Estimated Annual Total Emitted Quantity		232.92g-TEQ/year	24.990g-TEQ/year	79.467g-TEQ/year	109.084g-TEQ/year
Ratio of EmittedQuantity(%)		52.17%	5.60%	17.80%	24.43%

- The continual promotion of incinerator construction

· Taking the incinerators under construction into consideration, Korea has already reached the 20% goal of the First Comprehensive Plan for National Waste Management. Consequently, it could be said that although civic movements against incinerators have achieved partial success, we have not been able to stop the government's policy giving priority to incinerators. Hence, we must stop any new incinerators from being built. The incinerators already existing or under construction will be sufficient if food waste and wrapping waste, which make up a greater part of the municipal waste, are lessened and recycled more.

- The falling rate of operation

·The rate of operation of some incinerators is merely 30-60%(Nowon, Yangcheon incinerators). This is because large capacity incinerators were built regardless of the amount of waste generated in these areas. In the case of the Nowon incinerator, the waste generation is only 352 tons, recyclables included, but the incinerator capacity is 800tons/day. Currently, Seoul's administration is trying to elevate the rate of operation by receiving waste from other areas, but this would be breaking the promise with the residents that waste from other areas will not be brought in. With the increasing rate of recycling, especially the separate collections of food waste; many incinerating facilities are expected to record low rates of operation.

- The incineration of food waste

·30-50% of the waste currently being incinerated in the 19 facilities is food waste. Presently in Korea, food waste is classified as combustible waste. Food waste increases the dioxin emitted by incinerators.

□ Industrial Waste Incinerating Facilities

- Dioxin emission in great quantity

· Due to citizen monitoring and campaigns, strong regulations have been put on the dioxin emitted from municipal waste incinerators and the newest technology was used to reduce the amount of dioxin, but the industrial waste incinerators which are not monitored have polluted the environment by emitting great amounts of dioxin. One incinerator emitted up to 800 nanograms of dioxin. Regulations restricting dioxin emission have been set this year, but the maximum limit is too high and it is questionable whether the incinerator managers will follow the regulations.

□ Small Capacity Incinerators

- Small capacity incinerators are responsible for 52.17% of the dioxin estimated to be emitted from incinerators. Small capacity incinerators are not properly equipped to prevent dioxin and other pollutions and are therefore emitting a lot of dioxin. These small capacity incinerators must be shut down.

3. Civil Society's Counter Action against Incineration

□ The Achievements of Civil Action

- We blocked the reckless construction of incinerators through active civil movements. In 1991, Seoul authorities planned to build incinerators with a total capacity of 16500 tons per day (11 areas), but most were cancelled due to citizen opposition movements. There are 3 incinerators in Seoul now. If the incinerators had been built as first planned, the total amount of waste generated in Seoul today (11339tons/day, 2000) would not have been enough to keep all the incinerators running.

- We brought about the participation of residents in the management of the incinerators and

through it we are trying to secure safe management. The residents are carrying out safety tests on the incinerators and health tests, and restricting the bringing in of incombustible waste such as food waste. This consequently reduces the amount of waste incinerated and at the same time induces separate collection and reduction of waste generation.

- The anti-incinerator construction movements in many separate areas grew while joining with and receiving support form environment groups and on January 1996, the Korean Network for Waste Free was founded. And in 1999, through KWMN, this movement spread nationwide.

- We brought about the setting of strong regulations limiting dioxin emission.

- The civil society's efforts to find alternatives to incineration brought about movements to reduce waste fundamentally and increase recycling. (KWMN's movements to reduce wrapping waste, disposables and food waste)

□ The Future Tasks of Civil Movements

- To solve the problem of incineration, we must try to find an alternative to incineration under strategic movements with short-term actions and long-term views.

·With the increase in consumption, the use of wrapping and disposables, and the percentage of plastic waste are expected to rise. We must launch an active campaign to reduce the use of wrapping and disposables.

·Food waste must be kept out of incinerators and we need to start active campaigns to reduce food waste.

·Monitoring must be done not only on municipal waste incinerators but also on industrial waste incinerators.

·The resident groups of incinerator and landfill facilities(for example: Korean Network for Waste Free) and civic groups should strengthen their joint activities. Resident groups need to monitor and restrict recyclables and indisposable waste (for example: plastic, food waste) from getting into the facilities, and civic groups must use this pressure to bring about a social environment that can reduce waste and increase recycling.

□ In the long run, we must try to transform our society's system into one that produces no waste. Our lifestyle seeking only convenience and the industrial system that urges it must change. Efforts such as standardization of wrappings, material improvements (from plastics to recyclables) for example, can bring about change of lifestyle and production simultaneously. We need to use the POPs Convention appropriately.

MALAYSIA

Consumers' Association of Penang

Solid Waste Disposal and Incineration.

At present, the per capita generation of solid waste in Malaysia varies from 0.45 to 1.44kg/day depending on the economic status of an area. In general, the per capita generation rate is about 1kg/day. Malaysian solid wastes contain very high organic waste and consequently high moisture content and bulk density of above 200kg/m^3. A recent study conducted in Kuala Lumpur has revealed that the amount of organic wastes for residential area range from 62 to 72%. Disposal of solid waste is done almost solely through landfill method. There are about 177 disposal sites in

Peninsular Malaysia. In most cases, open dumping is being practised and takes place at about 50% of the total landfills.

In the Seventh Malaysia Plan (1995-2000), the Federal government had spent RM20.9million to build 9 sanitary landfills and upgrade 27 existing landfills in 34 local authorities. The government had also spent RM17million to purchase 7 mini-incinerators with a capacity of 5 to 20 ton/day to be operated in the resort islands in Langkawi, Labuan, Tioman and Pangkor.

The Malaysian government is introducing a new law on solid waste management. The principal processes options available and being recognized as hierarchy for integrated waste management are listed as follows: waste minimization, reuse, material recycling, energy recovery and landfill. The Economic Planning Unit of Malaysia states that new technologies with regard to waste treatment facilities such as transfer stations, thermal treatment plants and waste to energy would become an alternative treatment of solid waste in the near future.

The government relaunched its recycling campaign on 2 December 2000. It has targeted 22% of waste to be recycled by 2020. Composting is still being studied but not priority now. The government, due to scarcity of land and high waste generation rate, is planning incineration plants in the central region. Three incinerator plants will be installed i.e. in Kuala Lumpur, Selangor and Cameron Highlands, Pahang. The incinerator plant in Kampung Bohol, Kuala Lumpur with a capacity of 1,500ton/day is estimated to be RM1.2billion with funding from JBIC (Japan Bank for International Cooperation) and the specific technology has not been determined yet.

Another proposal for a thermal oxidation plant with a capacity of 50 ton/day in Sentul, Kuala Lumpur has been called off on the basis that it is close to residential areas, schools and businesses. The Terms of Reference for an Environmental Impact Assessment for the proposed project was submitted to the Department of Environment for review. Our organization had called for a detailed study on the economic valuation of environmental externalities; cost benefit analysis; social impact assessment, etc. The project proponent is looking for another suitable site.

The Department of Environment of Malaysia is looking into the protocol for sampling of dioxin and drafting of new legislation as Malaysia does not have a standard for dioxin emissions. On the 30th April there was a briefing for the department's staff on the following subject: "Environmental Analysis for Dioxins Sources, Fate and Transport, Sampling, Quotation and Interpretation of Results, Historical and Future Perspectives" by Michael Khalil Harvey, Asian Area Manager of Thermo Finnigan Corporation.

Medical Waste Incineration.

In 1995, when Malaysia's clinical waste management and hospital support services were privatized, regional and on-site medical waste incinerators were built. Currently there are 5 regional medical waste incinerators with capacity of 20 to 500kg/hr. Three more regional incinerators with capacity of 200kg/hr each are under planning and yet to be built due to siting problems and resistance by local authorities. There are seven small on-site medical waste incinerators, five 20kg/hr and two 50kg/hr.

Hazardous Waste Incineration.

A hazardous waste treatment plant for processing chemical waste has opened in Bukit Nanas, ninety minutes drive from Kuala Lumpur in the state of Negri Sembilan. The site is located in the middle of a rubber plantation and a long way away from the main road.

The plant, officially opened in November 1998, and modeled on the Danish hazardous waste processing plant, Kommunekemi, in Nyborg, is the first plant for processing hazardous waste in Malaysia. The owners of Kualiti Alam hold the contract for treatment of all hazardous waste in Peninsula Malaysia for 15 years. More than USD70 million has been invested in the plant.

When the plant was being designed, Malaysia drew up legislation on hazardous waste. The Act was prepared with Danish assistance and based on Danish legislation. There has been private Danish capital in the project during the planning stage and up to the actual opening. Through the DANCED programme, Denmark has provided support to start up the plant.

The plant receives all types of hazardous waste except hospital and radioactive waste. Organic waste is burnt in the incineration plant. Acidic and basic inorganic fluids are exposed to chemical treatment that neutralizes them and removes poisons such as chromium and cyanide. The residues from this treatment and solid inorganic waste are bound tightly with lime and cement before being deposited on a double membrane equipped landfill where there should be room for waste residues for up to 20 years.

Between 1995-1999, an average of 431,000 tonnes of scheduled waste was generated per annum, mainly from the metal finishing, electronics, textile, chemical and chemical-related industries, agricultural and domestic activities, and clinical waste from hospitals. By end of 2000, the Kualiti Alam plant received 216,500 tonnes of toxic and hazardous waste for treatment and disposal from 1002 companies.

Companies are now required to inform the authorities about hazardous waste and whether there is a need for associated collection, storage and processing. In addition, the companies have to pay for this service on the basis of the polluter pays principle.

CAP's Activity.

The Consumers' Association of Penang has embarked on an anti-incineration and waste minimization campaign. We are collecting signatures from the public nationwide, stating that we are against all kinds of incineration, whether medical, solid waste or hazardous industrial waste and urge the government to opt for other environmentally safe, economically just alternatives. We are also producing articles in our newsletters and booklets on the issue of waste, plastics, EDCs, composting, etc to raise the awareness of the general public on these issues.

Our aim, among others is to reduce the generation of waste through legislation to phase out and ban hazardous household products, minimize packaging, prevention of waste at source, reuse, recycle and composting.

NEPAL

THE ENVIRONMENT AND PUBLIC HEALTH ORGANIZATIONS (ENPHO)

Introduction

In the recent years solid waste management has become a major challenge in Kathmandu, the capital city and in other urban areas of the country. The haphazard disposal of solid waste in densely populated areas,

environmentally sensitive areas, riverbanks and heritage sites has not only made adverse impacts on the public health and the environment but also deteriorated the living standard of people.

In the past, waste management was not a big problem for the people in Kathmandu. Then, waste was basically composed of agricultural waste and kitchen waste, which was composted by the farmers for use in the fields. Very little waste was nondegradable which was reused and recycled. For example, in the last decade in Kathmandu, waste generated in households were either sold to the farmers or placed in pits called "sagaa" ("sa" in the Newari language means compost and "gaa" means pit). These sagaas were located in-between the houses. With rapid urbanization and with the introduction of items like glass, plastics, paper, etc., the consumption pattern of urban inhabitants has changed drastically resulting in an increased volume of waste and loss in the traditional practices of waste composting. As a result people dump their waste in streets, public places and only a little portion of the waste is recycled.

It was estimated that in 1997, residents from the country's 58 municipalities generated approximately about 304,848 tons of municipal waste, which is 83% of the total solid waste generated in the country. Agricultural waste and industrial waste made up only 11% and 6% respectively of the total waste generated which shows that household waste is the main source of municipal waste in Nepal. The per capita waste generation rate ranges from 0.25 to 5kg/day (SOE Nepal 2001).

Due to the low level of industrialization, limited use of pesticides and other hazardous chemicals it can be stated that Nepal probably generates very low amount of hazardous waste as compared to other countries. Even though hazardous waste production is still very low in Nepal, negligence and its mismanagement can have serious impacts upon the human health and the environment. Moreover, mixed collection of municipal waste with the hazardous waste deems all waste potentially hazardous, making it even more difficult to treat the waste.

Pressure on Waste Management

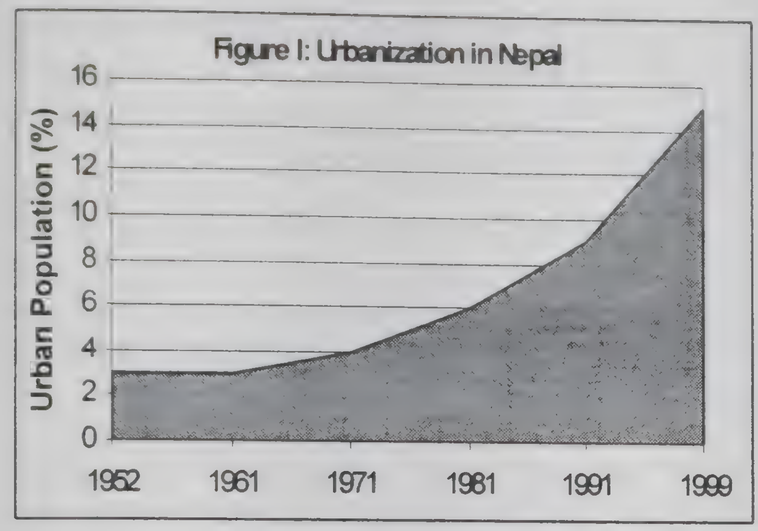
Some of the major hindrance in the solid waste management of Nepal is briefly described below:

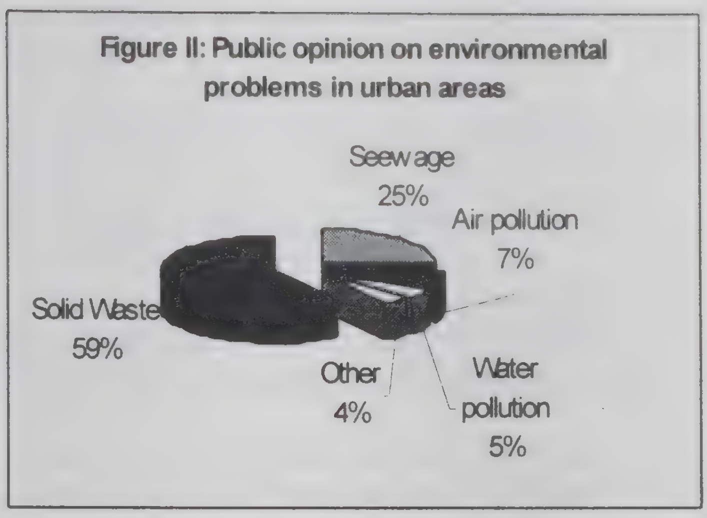
- Urbanization

The major pressure on waste management in Nepal is urbanization, which is characterized by the rapid and haphazard growth. This has exerted an enormous pressure on the urban environment and on the capacities of the government to cope with the changes. The most significant indicator of it is the heaps of garbage piled up on the city streets and other sensitive public areas.

Nepal is predominantly a rural country with only 15% of the population living in urban areas (municipalities with over 9000 population). However, it has the fastest growing urban population with a growth rate of 6.5% per annum, which is the highest in South Asia (Fig I). Between 1981 and 1991 the total municipal population grew by 77% while the rural population grew by only 17% (CBS 1997).

Kathmandu along with four other municipalities Lalitpur, Bhaktapur, Kirtipur and Madhyapur-Thimi is the main urban area of Nepal. The rising migration rate of population from the hills of Nepal in search for job, education and other opportunities is the main cause of rapid growth in the urban population. Urbanization is not a problem in itself but the unplanned growth causes many environmental problems such as riverbank encroachment, air and water pollution, and solid waste generation. A public survey of 3980 urban residents all over Nepal showed that most of the surveyed people felt unmanaged solid waste as a major problem (Fig II).





- Attitude of the public and the authorities

One of the root causes of solid waste mismanagement is the public attitude. "Out of sight, out of mind" is the most common response of the public to problems of solid waste management in Nepal. Similarly the authorities associated with waste management have limited their task to sweeping and dumping the waste in places where they receive no public complain. The general people take waste as a nuisance rather than a source of resource.

There are some policies formulated by the government on waste management such as Solid Waste Management National Policy 1996. This policy emphasizes to make solid waste management simple and effective, mobilize solid waste management as a resource, to privatize solid waste management, to obtain public support by increasing public awareness on waste management. Likewise the Local Self-Governance Act (1999) makes individual municipalities responsible for waste management while the Ninth Plan (1997-2002) emphasizes the promotion of recycling. But the implementation part is visibly lacking as far as the policies are considered.

- Lack of financial resources

The government has increased the responsibilities of the municipalities by imposing the Local Self Governance Act where individual municipality is responsible for overall management of its waste. But on the other hand the government has abolished the Octroi tax, which was the major source of income for the municipalities. As a result, most of the municipalities are struggling to mobilize resources just to meet their regular expenses. Due to the unavailability of funds, municipalities are unable to spend much amount of resources on waste management, especially capital investment for the purchase of vehicles, equipment and building of infrastructures.

Waste Management Practices

In the rural areas, waste is still managed in the traditional method but in the urban areas it has loomed up as a major problem. Use of open space, unclaimed land, riverbanks, and roadsides for waste disposal is the common practice of people in the urban areas. Most of the municipalities have allocated certain area as dumping sites where all kinds of waste are disposed. Kathmandu is the only municipality having a landfill site. About 250 to 300 ton of municipal waste is dumped on the landfill site, compacted and covered with soil everyday. Hazardous medical waste is also dumped on it. The landfill site is now full and the inability of the government to provide a new landfill site has lead to solid waste management problems in the capital. At present municipal waste is temporarily dumped along the banks of River Bishnumati in the capital, as bedding materials for the construction of motor roads.

Regarding the management of hazardous waste there is so far no state level policies to check and monitor its disposal. The sources of hazardous waste in the country are medical waste from healthcare institutions, obsolete pesticides, batteries and effluents and by products of industries. At present in most municipalities

hazardous waste are dumped along with municipal waste causing a major public health risk. In a recent survey conducted by ENPHO on hospital waste management, it was estimated that Kathmandu city alone generates about one ton of hazardous hospital waste per day. Few of the individual healthcare institutions have set treatment facilities such as waste incinerators and autoclave to treat its waste. However, establishment of such treatment systems are not very common in Nepal. So far there are no municipalities in the country having the provision of waste incineration facilities to treat municipal waste.

Status of Waste Incinerators in Nepal

The use of incinerators has not yet become a common practice to treat waste. There are a few incinerators for the treatment of medical waste established in the country, mainly under foreign assistance. There are no guidelines set up for the establishment of waste incinerators in the country.

The first incinerator was introduced during the early 80's in Patan Hospital in Kathmandu. It has a capacity of 18kg/hr and was manufactured in Britain, The Incol Minion. But due to technical problems in the oil feeding system it could not come into operation and since then the equipment has been left idle. Similarly, one incinerator each was installed in Teaching Hospital in 1981 and at Kanti Children Hospital in 1985, with capacities of 200 and 20 kg/hr respectively. Both the systems were manufactured in Japan under KOGYO Company. Teaching Hospital used the system for a while whereas the later hospital did not use it. T able 1 gives a summary of the existing and the proposed waste incinerator system.

Table 1: Current and future incinerator schemes in the country

Name of Company	Location in Nepal	Capacity	Type	Present Status	No of incinerators installed	Funding source
German	Sushma Koirala Memorial Hospital, Kathmandu	-	-	Working	1	
HAAT, India	BP Koirala Institute of Health Sciences, Dharan	100kg/hr	Double chambered	Working	1	Private
HAAT, India	Nepalgunj Medical College	100kg/hr	Double chambered	Not yet installed	1	Private
ITDG	Zonal Hospitals in Nepal	For 100 beds	Single chambered	Working	7	DFID/British Council
Japanese Company	Teaching Hospita Kathmandu	70kg/hr	Not known	Proposal approved	1	JICA
Not known	Centralized Hospital Waste treatment facility in Kathmandu	100kg/hr	Pyrolytic	In the planning phase	1	Not yet known

Initiatives to improve Waste Management System

Some of the major initiatives taken in the process of waste management have given below:

- Some of the municipalities in Nepal practice have initiated large scale composting. For example the Bhaktapur municipality, a neighboring municipality of Kathmandu, has operated a composting plant, which has a capacity to process 4 tons of waste per day.
- The Kathmandu Metropolitan City (KMC) is currently operating few small scales composting plant. Recently KMC signed an agreement with a private party for the construction of a plant with a capacity of 300 tons /day to make fertilizer from all of Katmandu's organic waste. The operation of this plant would solve the waste management problem of Kathmandu for a long way.
- Paper recycling is a well-established industry in Nepal and it has the capacity to recycle all the paper waste generated in the country. However this has not been done due to the lack of scrap paper collection system.
- In Kathmandu, about 5% of the municipal waste is recycled. Scarp dealers buy waste through the scavengers and scrap collectors and sell it to recycling factories in Nepal and India. Goods such as iron parts, plastic bags, and paper are collected. With the right incentives from the government and the practice of source separation of waste it would certainly boost up the recycling process.
- Plastic recycling industries such as Enviroplast have been established in Nepal but due to lack of clean scrap plastics the recycled products are of low quality.
- The municipalities association of Nepal (MUAAN) and the Urban Development through Local Efforts (UDLE) project of GTZ are currently introducing training courses to municipal staffs from various municipalities on waste management.
- Similarly Schools, NGOs, INGOs and local clubs have initiated their own programs to improve waste management practices.
- Community and private parties have initiated door-to-door household collection of waste in many wards of Kathmandu to check the haphazard disposal of waste.

ENPHO in association with the Kathmandu Metropolitan City is currently in the process of designing a centralized medical waste treatment system for the healthcare institutions in the Kathmandu City. Implementation of this waste management system would help to manage the haphazard disposal of hospital waste in the capital and also facilitate the establishment of the organic fertilizer plant in Kathmandu.

Conclusion

The process of rapid urbanization has resulted in a large volume of waste in the urban areas of Nepal. Poor government policy and response, weakness of institutions at the local level has resulted in improper management of the waste, especially in the context of Kathmandu. As a result it is causing major problems related to environmental pollution. In the recent years some efforts have been taken on part of the private individuals, Schools, Local Clubs, NGOs, INGOs for the management of waste in Nepal but have not yet gained the momentum. The formulation of the Solid Waste Management Policy, 1996 is a good start on part of the government in addressing the issues on solid waste but follow up plans and programs is still needed. ENPHO's initiative to set up a medical waste management system in association with the Kathmandu Metropolitan City is a small effort on the NGO level. It is hoped that with the participation in the WNA 2001 Workshop new ideas and solutions to waste management problems will emerge and will also be helpful in designing an efficient medical waste management system for Kathmandu and future waste management programs in the Nepal.

PAKISTAN

World Wildlife Fund-Pakistan

It is a common misconception that things simply disappear when they are burned. However, matter cannot be destroyed, it merely changes its form hence all types of incinerators release pollutants to atmosphere in stack gases, ashes, chemicals and other residue. The situation is worse in developing countries like Pakistan.

Municipal solid waste (MSW) is collected in roadside bins and Municipal Corporation collects it infrequently. Solid waste generation ranges between 0.6 to 0.8 Kg/capita/day and the waste generation growth rate is 2.4% per year. Fairly around 40% of the generated waste remains either at collection points or in streets [2]. It is a common practise to burn this waste in open. Residential waste is usually collected and transported directly to a landfill site. However, these landfills are not designed properly causing problems like incomplete decomposition of MSW, methane production and leachate contamination of groundwater. At the collection points, different types of waste are not collected separately, and there is no proper waste collection system either. Waste is dumped un-segregated and collected by three methods: 1) hauled container system, 2) stationary container system and 3) bull carts.

In Pakistan, the containers are mostly transported from one place to another with help of a truck or tractor, which is overflowing and not covered properly. The waste spills out of the container and a lot of it falls in the streets before reaching the landfill site. Similarly, in certain areas bull and donkey carts are used to collect the MSW. The cart goes from street to street picking up the waste and is again not a proper system for waste collection. A factsheet on Municipal Solid Waste Management (MSWM) has been developed by WWF-Pakistan with a viewpoint to facilitate the readers on efficient practices of solid waste management [2].

The government has initiated a plan to privatise the MSWM in the country. This could be done using the present network of recyclers and scavengers to collect and process garbage. It would be in their interest to make arrangements with individual households and industries to segregate different recyclable at the source. This interest of the private collector in segregated garbage could be translated in payment in terms of 'free' garbage collection or cash payment for the segregated material [4].

Waste management from both hospitals and municipalities is a gigantic problem in Pakistan. In Pakistan, around 250,000 tons of medical waste is annually produced from all sorts of health care facilities. Mixing of most of the hospital waste with municipal solid waste worsens the problem. Disposable syringes, foetuses, body organs, plastic bottles lay astray in the open dumps of the hospital waste [1]. Some hospitals and municipalities burn their wastes, which results in the production of large amount of highly toxic gases. It is quite unfortunate, that no monitoring has been done to measure the levels of these emissions and resulting pollution in the air.

Hospital waste incineration is gaining momentum in Pakistan. 'Private Sector Hospital Waste Management Program' is an example of one such project sponsored by a European donor. Under this project, two incinerators were installed one each at Shalamar Hospital Lahore and United Christian Hospital Lahore. The incinerators were said to meet the existing NEQS for air emissions in Pakistan. However, these emission standards are not stringent enough to ensure a safe operation. Such machines are also working at other renowned hospitals like Shaukat Khanum and Sheikh Zaid Hospitals in Lahore and Agha Khan Hospital in Karachi. Government has installed two incinerators at Karachi Metropolitan Corporation's (KMC) worth US$703,442/-, which will burn the waste from KMC's hospitals. Pakistan Council for Scientific and Industrial Research (PCSIR) has also invited applications to fabricate incinerators for Hospital Waste Management (HWM).

The incinerator set up in a Karachi hospital in 1981-82 is UK manufactured dual chamber incinerator with a capacity of 250kg/hour. The incinerator has a manual loading and de-ashing system, without having any flue cleaning equipment attached to it. Sometimes, excessive water in the waste causes

incomplete combustion, which results in emissions of black smoke. Another incinerator made its way in a Karachi hospital in 1990-91 and is also UK made dual camber with a capacity of 75kg/hour with a manual loading and de-ashing system, again without having any flue cleaning equipment. The conditions are further aggravated due to its low chimney height and location in a congested area [3].

A Japan-made single chamber incinerator with a capacity of 170-180kg waste/hour was installed in 1986 in a Lahore medical complex with manual loading and de-ashing system, without a flue gas cleaning equipment attached to it. Its poor designing, problems in control and relays combined with incomplete combustion result in emission of black smoke. Four USA made non-trademark incinerators, each with a capacity of 60-80 kg/hour were installed in a medical science institute in Islamabad in 1993. It is shocking that the waste in these incinerators is burnt in plastic bags again resulting in toxic emissions [3].

Recently, Ministry of Health, Government of Pakistan has prepared "Guidelines for Hospital Wastes Management". It recognises that most of the incinerators in Pakistan are installed without any emission control and proper monitoring devices. The guidelines are:

- **To bring hospital waste under emergency control**
- **Introduce safer, more effective and more permanent control systems [3]**

However, the incineration technology is still foot loose in the country due to poor enforcement of legislation. WWF has been playing its role to divert this trend and make the public and policy makers aware of the threats, which incineration carries. Various press releases and articles have appeared in the print media highlighting the deadly impacts of incineration technology. A factsheet has also been developed on Hospital Waste Management (HWM) promoting safer non-burning alternatives to incineration.

Despite these efforts, waste management in Pakistan and the future of incineration technology in Pakistan still seems fearless and much needs to be done to curb this expanding problem. The first and gigantic step in bringing an anti incineration revolution should be a massive awareness raising among the public, government and the policy makers. Waste management at source should be introduced. Proper segregation can help in recovering and recycling of many parts of the waste stream. WWF strongly urges the international donors to provide technical and financial assistance to developing countries like Pakistan to introduce non-burning technologies for waste management. We also feel that the first important step in this situation is to bring out these issues at the front with a special focus on their remedial measures.

References:

1. Factsheet on HWM
2. Factsheet on MSW
3. SDPI Research & News Bulletin, Vol. 8, No. 2, March- April 2001
4. The Pakistan National Conservation Strategy (NCS)

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PHILIPPINES

Mother Earth Unlimited and Greenpeace Southeast Asia

Metro Manila produces about 5,350 metric tons of garbage daily, (1998 MMDA Waste Amount and Composition Survey). Waste segregation, composting and recycling has been declared as State policy and the nation is facing a critical point, and an opportunity, to make the decisive shift for ecological waste management. The resolve of national government, local authorities, the private sector and the environment community, is now being put to a test as action plans are laid down to realize the goals of these policies

The Ecological Solid Waste Management Act

Republic Act 9003, also known as the Ecological Waste Management Act of 2000 – was passed into law in December 2000. The Act promotes source separation/segregation, recycling and composting. It has adopted sanitary landfills as the preferred option for disposal over open dumpsites and incineration. Likewise, it created the National Solid Waste Commission headed by the Department of Environment and Natural Resources. It gives importance to the information, education campaign (IEC) on solid waste management, and prohibits burning of solid waste.

Through its passage, a comprehensive solid waste management program is expected to be put in place. Unfortunately, instead of moving in the right direction, the Philippine government is still heavily fixated on back-end solutions like landfills and even incinerators, which are already banned in the Philippines by virtue of the Clean Air Act.

Waste Disposal and Treatment

The solid wastes disposed in Carmona and in San Mateo Landfills (SLF) have reached critical limits. In 2000, waste disposed in San Mateo SLF attained an all time high of 1,787 tons/day or 8,935 m^3 /day. The Carmona and San Mateo landfills ceased operations in 1998 and 2000, respectively.

As of March 2001, Metro Manila disposes its garbage in open and controlled dumpsites, in Catmon, Malabon; in Vitas, Tondo; and in Brgy. Lingonan, Valenzuela. The Payatas Dumpsite in Quezon City is also partially used and only accepts waste generated in Quezon City. Aside from these, 12 small open dumpsites are located in Metro Manila.

At present, there are around 226 municipal open dumpsites scattered around the country, with Region 4 having the most number of these dumpsites. Of the total, 37% have been inspected by National Solid Waste Management Commission (NSWMC), for compliance with prescribed site requirements.

More Open Dumpsites and Landfills

The Philippine government is considering the construction of sanitary landfills all over the country. Statistics revealed that there are 83 proposed sanitary landfill sites in the country, 18% of which will be located in Metro Manila. Illegal uncontrolled and open dumpsites are also scattered all over the country.

Waste Incineration in the Philippines

In June, 1998, the Philippines made history by being the first country in the world to ban the use of incinerators for waste disposal following the approval of the Clean Air Act (CAA). Its

implementing Rules and Regulations was signed by the then DENR Secretary Antonio Cerilles on November 7, 2000.

However, there are attempts to undermine the incineration ban. Just recently, the Philippine Councilors' League and the Governors League of the Philippines have passed resolutions seeking the lifting of the ban on incinerators. The two groups want the ban on incinerators lifted in highly urbanized cities currently confronted with garbage problems. Manila Mayor Lito Atienza also reiterated his appeal to the Senate and the House of Representatives to pass an amendment to the Clean Air Act that would allow the use of "pollution-free incinerators." Rep. Dante Liban, in the early part of this year has filed a bill seeking to amend the Clean Air Act to lift the ban on incinerators, arguing that the garbage crisis could be solved by the use of "environment-friendly incinerators" that could pass strict international standards and safety requirements

Type of Incinerators in Operation

Industrial Waste Incinerators. There are currently 15 industrial waste incinerators in the Philippines. Seven incinerator facilities are in Region 4 and five in NCR.

Medical Waste Incinerators. The 1,700 hospitals in the country generate about 6 tons of infectious waste daily and health centers and stations generate another 1.4 tons/day. Out of the 7.4 tons generated per day, 50% goes to medical waste incinerators while the other half are improperly disposed.

Records of the National Solid Waste Management Commission show that there are 42 existing hospital incinerators in the country, 25 of which are operating on-site government-run hospitals. Hospital waste incinerators are small and inefficient. They are usually run by untrained personnel, and are not equipped with extensive air pollution control devices. Many of these facilities have escaped government monitoring, and even in rare cases that they are monitored, they are not being monitored for pollutants such as dioxins, furans and heavy metals.

Incinerator Pushers. During the deliberations on the Clean Air Act, international incinerator builders and operators like the French Generales des Eaux (GDE) and the engineering firm Asea Brown Boveri (ABB) together with their local allies launched a massive public relations and misinformation strategy aimed at neutralizing the growing opposition to incinerators in the country. Likewise, the Italian government, the Swedish government, the Metro Manila Development Authority, the Asian Development Bank and the American Chamber of Commerce lobbied against the provision totally banning incinerators at the height of the congressional debate. Their strategy was to establish among others, that there are state of the art incinerators and that such incinerators were pollution-free, an assertion that we had to disprove at the time of the Congressional deliberations on the ban.

Recently, Alstom, a French power- generating firm proposed to the Philippine government the use of "waste to energy technology to solve Metro Manila's garbage disposal problem."

Solid Waste Expenditures

In 1997, the MMDA spent Php 751 million for its solid waste management efforts while 17 LGUs allocated Php 1.65 billion for the same in 1996 (US$1=PhP50 at present). On a national basis, solid waste management expenditures in 1994 increased roughly more than three-fold compared to 1988 expenditure data. It is worth mentioning that the percentage share of solid waste management on the total government expenditure on environmental protection services grew from 24.3% in 1988 to 31.4% in 1994.

ECO-Waste Initiatives

Metro Manila Linis Ganda. In 1999, the Linis Ganda Recycling Center in Cubao, Quezon City purchased Php 124 million worth of recyclables. Among the recyclables bought were waste paper, corrugated boards, cullets, plastics and metals. Linis Ganda has recycling centers in the 12 cities and 4 municipalities of Metro Manila.[2]

The Federation of Multi-Purpose Cooperatives. The Federation of Multi-Purpose Cooperatives (FMPC) is an association of 17 environmental cooperatives. It consists of 572 junk shops employing more than 1,000 eco-aides. The junk shop owners buy and collect recyclable items like paper, plastic, bottles, cans, etc. in their respective areas of assignment. They also provide the seed money used by their eco-aides. By forming Environment Multipurpose Cooperatives, the junk shops are able to borrow money without any collateral. The cooperatives monitor the activities of their members and respond to problems as they crop up. They submit regular reports to the Federation, which in turn prepares an annual report of the operations of all their members showing what types of recyclable materials were bought, and the volume and value for each type.

The Cavite Green Coalition. The Cavite Green Coalition was officially launched last February 7, 2001,after more than a year of struggle against a proposed mega-landfill project in a watershed area in the province of Cavite, Philippines. The coalition has actually been in existence with a different name, Coalition Against the Magallanes Landfill, since December 7, 1999. Through the initiative of the Social Action Center of the Diocese of Imus, many citizens' groups and individuals from various sectors, including those from the academe, militant groups, and the Catholic Diocese of Imus Ecology Commission, were brought together under the banner of the anti-landfill opposition movement in the province.

The Eco-Waste Coalition. The Eco-Waste Coalition was organized in January, 2000 at the height of regional and local campaigns against landfills. The coalition of over 110 community organizations, church-based groups and environmental NGO's was initiated by the Landfill Watch of the National Secretariat for Social Action (NASSA) of the Catholic Bishops' Conference of the Philippines and Greenpeace Southeast Asia (Philippines). The coalition has since been engaged in a number of policy debates that culminated in the passage of Ecological Waste Management Act (RA 9003 of 2000) and successfully defended communities that have been targeted as host sites for Metro Manila's garbage. Presently, member organizations of the coalition are engaging the DENR and THE MMDA in the implementation of the law.

SRI LANKA

Environmental Foundation

Introduction

Waste management in Sri Lanka has become very important since the country is becoming highly industrialized due to the establishment of Export Promotion Zones and Industrial Parks. Proper Waste Management could avoid environmental pollution, which would create environmental disasters to the country.

Current practices and procedures for Hazardous Waste Treatment and Disposal

1.Physical/Chemical treatment

2.Biological treatment

3.Oil/ Water separation

4.Solvent recovery

5.Land disposal/Land fill

6.Incinerator

In Sri Lanka mainly land filling is employed. Dumping of municipal garbage in wildlife sanctuaries and environmentally sensitive areas has created environmental pollution.

Waste incineration

Waste incineration has to be carried out at temperatures 1000-1200^{0}C. If the temperature is maintained at this level, dioxins and furan from pvc, plastics, polythene and chlorine compounds would be completely burnt. Below 1000^{0}C, these toxic/ hazardous substances will not burn and create serious environmental and health problem.

Pros and Cons of incinerations

Incineration reduces landfill space thereby reducing ground water pollution caused by landfills. However, the by products due to incinerators cause both environmental and health hazards.

In Sri Lanka, waste incinators are used in

1. Industry
2. Hospitals

Private companies own the industries, which employ incinerators.

Few government hospitals have incinerators but we have been informed that they are defective and hence do not function now.

Some private hospitals use incinerators but we were unsuccessful in getting further information.

These incinerators are used to dispose of medical waste.

Problems in incinerators

1. No proper maintenance

2. Use of untrained/ unskilled operators

3.Sound technologies not used

Action against incinerators

During 1987-1988, a degraded agricultural pesticide was imported under the pretext of rubber erases and was held up in the port of Colombo, for two years as it was unclaimed. Then it was proposed to incinerate this stock of 190 tons, in a place 30 km from Colombo.

A massive protest made by environmentalists and media prevented this incineration and the government ha to re-export this consignment to the supplier.

Promotion of non burn alternatives

i. Recycling of Plastics

A leading private company in the Rubber and Plastic sector has planned a nation wide plastic waste recycling project.

Special bins will be placed at key locations around Colombo for people to dispose of their plastic waste. Th offices, Schools, Factories and households would be targeted.

This venture will reduce the use of plastics. Biodegradable plastics are not a viable option as these cannot b recycled.

ii. Recycling of Polythene

Discarded polythene is used to make shoe soles. The daily production is 800 pairs of shoe soles. This sma scale industry employs eight workers.

iii. Recycling of household garbage

Plastics, polythene, glass etc are separated from the household garbage and the rest is put into a speciall built large drum. Compost fertilizer would be produced in the drum.

Composting consists of aggregating organic solid wastes into piles (Compost piles) and creating maintaining physical and chemical conditions that promote microbial degradation.

iv. Recycling of glass

Discarded glass bottles, broken glass and glass pieces are recycled to produce fresh glass.

It is estimated that with a comprehensive plastics-paper-metal-glass recycling program, 70% of a material entering municipal waste dumps could be recycled.

Hence recycling and reusing wastes is an alternative to landfills, which create environment problems.

TAIWAN

Taiwan Watch Institute and Green Citizen's Action Alliance

Current Status

According to Taiwan's Environmental Protection Administration, there are 8.46 million tons municipal wastes, 1.08 kg/day per capita in 2000.
As for industrial waste, it amounts to 115.65 million tons in 2000. Factories produced 19.47 millio tons, of which hazardous wastes make up 1.61million tons. Only 63% is appropriately managed.
Medical waste, including 13500 tons of infectious waste, is estimated to be 90200 tons. Currently there are 37 medical waste incinerators operating, handling 90% of the infectious waste.
Agricultural waste, mostly reusable organic material, is produced 96.09million tons last year and 49% is properly handled.

Municipal and industrial waste totaled up to 124.1million tons.

Taiwan's Development of Incinerators
The government of Taiwan decided to adopt incineration as a medium to long-term strategy for handling municipal waste in 1986, and in 1991 drafted the "Construction Projects for MSW Resource Recovery Plant," approving 21 large incinerators.

In 1996, the government began to encourage private investment in incinerator construction, claiming budget shortages. 15 more incinerators were approved to be constructed by BOO/BOT.

"The Small MSW Incinerator Construction Plan", drafted in 1994 proposed 10 small incinerators on Taiwan's outlying islands and in various watersheds. 12 more privately-owned small incinerators were later approved in a emergency plan to take care of the large volume of waste in some areas that still had many years to wait before the large incinerators built to serve their communities would be finished.

Dioxin Regulation
The Neihu Incinerator went on-line in January, 1992, but dioxin emission limits of 0.1 ng-TEQ/Nm^3 were not established until August, 1997, and this limit only applies to large incinerators. Moreover, incinerators approved for construction before 1997 did not have to comply with the standards until August, 2001.

Standards for small incinerators (0.5 ng-TEQ/N m^3 for incinerators that handle under 96 metric tons of refuse a day and 0.1 ng-TEQ/N m^3 for incinerators that exceed this limit) were not passed until October, 2000, and the standards will not go into effect until between 2003-2004, depending on the scale of the incinerators.

In May and June of this year, the investigation branch of the EPA in southern Taiwan found levels of dioxin as high as 50 ng-TEQ/N m^3 at the Meinung incinerator after conducting a month-long test, but emission standards for the plant will not go into effect until 2003.

Dioxin is difficult to measure over long periods, and measuring is expensive. So currently dioxin measuring at incinerators takes place only once a year. Incinerator operators are therefore able to select certain types of garbage, control the temperature of the plants, and even add activated carbon to the mix to reduce emissions during the measuring period. The small-scale incinerator in Meinung only added activated carbon filters after the dioxin measuring began.

In January, 2000, the Mucha incinerator suddenly went off-line, but the operators did not inform nearby residents. Only after they reported the stench coming from the incinerator's smoke-stacks was the media alerted, and did the public know of the large amount of dioxin emitted from the plant.

Ash Management
Taiwan's laws permit the mixing of fly ash and bottom ash (which is referred to as ash after mixing), and also permit the ash to be dumped in landfills and covered with earth. Ash is dumped into the Shanchu Dump in Taipei City in the open air, with serious effects for workers at the dump and sanitation workers.

Not all of the fly ash produced in Taiwan's incinerators is currently turned into a solid. Taiwan's EPA is presently planning to allow private operators to participate in fly ash recycling projects, which would turn the fly ash into road materials and bricks for everyday use.

EPA's Waste Management Policy Contradicts Itself!!

The EPA estimates that 8,367,272 tons of household waste was handled in 2000. Recyclables accounted for 477,856 of this waste, leaving 7,889,416 tons that was disposed of, or 21,615 tons per day.

The 21 large incinerators and 15 BOO/BOT incinerators have a total daily installed capacity of 30,400 tons. This figure does not include the volume of refuse that the small incinerators built recently can handle. With this excess capacity, it appears that the incinerators will not be able to find enough garbage to burn in the future.

Statistics from the EPA show that the recycling-reuse rate can be improved to 40% in Taiwan, and the government's policy is now to reduce the volume of garbage, and increase recycling and reuse. The continued construction of incinerators goes against the direction of this policy. If the rate of recycled-reused garbage is increased to 40%, then the average daily garbage would be reduced to 14,000 metric tons. Why does Taiwan need to have over 30,000 metric tons of incinerator capacity?

Also, the EPA appears to be planning to add industrial waste to the system that presently handles only household waste. In fact, much industrial waste is already being handled by the household system. We are concerned that the government will also permit hazardous waste to be accepted by incinerators, increasing the threat to residents.

Taiwan's Anti-Incinerator Movement

Residents in Dalin in Chiayi County, aboriginal people in Wufeng Village and JienShih in Hsinchu County, and Da'an in Taichung County have already successfully stopped plans to construct incinerators in their communities.

Residents in Meinung surrounded the incinerator there twice last year. The former EPA administrator agreed to shut the plant down last year, but unfortunately the new administrator decided to measure the dioxin emissions of the plant instead of closing it. The report of the emissions testing showed that dioxin levels were 500 times that of emission standards. Residents in Meinung are continuing their struggle. Other struggles against incinerators are underway in Lukang of Changhua County, Chunan of Miaoli Country, and Lin'na of Yunlin County.

21 LARGE INCINERATORS (PUBLICLY-OWNED)

	設置地點 Location	日處理量 (噸/日) capacity	竣工日期 Date of Completion	代為操作的包商 operation company
1	內湖 NeiHu, Taipei	900 ton/day	1992.01.24	無
2	木柵 Mucha, Taipei	1500 ton/day	1994.07.21	無

3	台北縣新店市 Hsin Tien Taipei	900 ton/day	1994.05.28	信鼎
4	台中市 Taichung	900 ton/day	1995.05.08	達和
5	台北縣樹林鎮 Shulin, Taipei	1350 ton/day	1995.06.01	達和
6	嘉義市 Chiayi	300 ton/day	1998.11.18	達和
7	北投 PeiTou, Taipei	1800 ton/day	1999.05.26	無
8	台南市 Tainan	900 ton/day	1999.08.17	信鼎
9	高雄市中區 Kaohsiung Centrum	900 ton/day	1999.09.01	無
10	高雄市南區 Kaohsiung South	1800 ton/day	2000.01.20	無
11	高雄縣仁武鄉 JinWu, Kaohsiung	1350 ton/day	2000.05.16	太古昇達
12	台中縣后里鄉 Houli, Taichung	900 ton/day	2000.08.14	日立造船
13	新竹市 Hsinchu	900 ton/day	2000.10.24	中興電工
14	屏東縣崁頂鄉 KenDing, Pintung	900 ton/day	2000.12.16	川崎重工
15	彰化縣溪洲鄉 Shi-Jou, Chunhua	900 ton/day	2000.09	中油
16	台北縣八里鄉 Bali, Taipei	1350 ton/day	2001.06	
17	高雄縣岡山鎮 Gon-Shan, Kaohsiung	1350 ton/day	2001.11	
18	嘉義縣鹿草鄉 Lu-Tsou, Chiayi	900 ton/day	Due on 2001.12 完工	
19	台南縣永康市 Yun-Kong, Tainan	900 ton/day	Due on 2003.12 完工	
20	宜蘭縣利澤 Li-Tzei, Iland	600 ton/day	終止合約，重新招標中	
21	基隆市 Keelung	600 ton/day	終止合約，重新招標中	

BOO/BOT incinerators

	設置地點 Location	營運方式	日處理量 (噸/日) capacity	竣工日期 Date of Completion	承包商 Contractor
1	桃園縣(南區中壢廠)Tao-yuan	BOO	1200 ton/day	預定 91.5 完工，90.4 已開始試燒	長榮集團
2	新竹縣 Hsin-Chu	BOO	300 ton/day	預定 2001.12 公開招標	
3	苗栗縣(竹南鎮) Miaoli		500 ton/day	(因民眾抗爭，1999.11.23 公告廢標) 預定 2001.12 重新招標	
4	台中縣(烏日鄉) Taichung County		600 ton/day	2000.9.20 簽約	中鼎工程
5	南投縣 Nan-Tao	BOO	500 ton/day	預定 2001.12 公開招標	
6	彰化縣 Chunhua	BOO	800 ton/day	2000.4 簽約	達和
7	雲林縣 Yunlin	BOO	600 ton/day	目前僅達和一家通過環評，預定 7 月底開標	
8	台東縣 Tai-dong	BOO	300 ton/day	2001.1 簽約	達和
9	台北縣(汐止) Taipei County	BOO	300 ton/day	預定 2001.7 招標	無
10	桃園縣(北區廠) Tao-Yuan (North)	BOO	800 ton/day	2000.6.8 開標	中鼎/長億
11	台中市 Taichung City	BOO	600 ton/day	(原環評未通過，廢標)重新招標，目前三家通過環評，預定 2001.8 截止收件	
12	台中縣(大安鄉) Taichung County		500 ton/day	2000.5.18 廢止設置 cancelled	
13	台南縣(七股鄉) Tainan County		900 ton/day	預定 2001.12 招標	
14	花蓮縣 Hualien County	BOO	400 ton/day	2001.3 招標中，預定 10.31 截止收件	
15	澎湖縣(湖西鄉) Penhu County		200 ton/day	預定 2001.7 公告招標中	

THAILAND

Greenpeace Southeast Asia

Current and Emerging Waste Management Issues

Area: 512,993.65 square kilometers

Population: 60 million (as of November 1996)

Solid Waste Generation. The amount of solid waste has increased every year, particularly the proportion of waste that is difficult to process. Rampant consumerism has meant that waste generation has been greater than the provision made for it. Additional problem is the presence of hazardous waste mixed in with solid waste. Total solid waste throughout the country was 13.5 million tons in 1997, of which 24 percent came from Bangkok, 35 percent from other urban areas and the remaining 41 percent from rural areas.

Thailand's current solid waste management strategy focuses on bulk collection and mass disposal. Recently, Thai government is trying to implement an "integrated waste management system" that will include waste sorting, composting, and incineration. Most recently, in response to growing amount of waste, Thai government set up national policy to 1) improve solid waste disposal and processing procedures which may be achieved through privatization of waste eliminating works. 2) support and encourage proper solid waste separation. 3) encourage recycling and reuse and 4) support local government to build up capacities for waste management.

Hazardous Waste Generation. According to figures released by the Pollution Control Department, in 1996 there were 1,634,104 tons of industrial wastes, estimated to rise to 2,813,980 tons in 2001. Currently only small proportion of industrial waste in treated correctly, whether in the factory or at a waste treatment center. The existing industrial waste treatment center can handle 360,000 tons per year. Of the remainder some is stored for future treatment, some is illegally dumped in public places. Thus in any one year some 1 million tons of industrial waste remains untreated.

In 1997, the Industrial Works Department hired the CMS Engineering and Management Company and Rust International Inc of the USA to analyze and predict the increases in industrial waste over next 10 years. This estimation to be used to draw up a Master Plan for the Elimination of Hazardous Waste by establishing industrial waste management center in a provinces. The Ministry of Industry emphasized an incineration of hazardous waste as its component. The construction of proposed industrial waste incinerator is supposed to be in Bang Poo industrial estate costing 220 Million Baht and estimating 10,000-50,000 tons of waste could be burnt per year.

Medical Waste Generation. The Thai institutions that deal with technical matters of medical waste management include the Pollution Control Department (PCD), the Department of Health (DH) and the Bangkok Metropolitan Administration (BMA). Each institution carries out its own functions rather independently. However because of differences in the definition of medical waste used by each institution, there are discrepancies in the basic data pertaining to hospital wastes, particularly with respect to the types and generation rate of wastes. Due to reasons cited above, the waste generation rates issued by the BMA, DH and PCD are 0.11, 0.43 and 0.65 kg/bed/day respectively. In 1995 the DH commissioned a study on the disposal of hospital wastes by incineration, which revealed that the average waste-generation rate was 0.23 kg/bed/day.

By far the most common treatment method of medical waste in Thailand is incineration. Presently the Bangkok Metropolitan Administration (BMA) operates two 10-ton-per-day incinerators for the disposal of medical wastes in the Bangkok area. The Department of Public Hygiene, Ministry of Public Health, which oversees the disposal of wastes from hospitals under the Ministry's jurisdiction, has developed standard incinerator designs of 25, 50, and 100-150 kg/hr capacities. According to Department of Environmental Health, there are 750 medical waste incinerators installing in the hospital under the jurisdiction of the Ministry of Public Health all over country. Most of these incinerators have deteriotated, prompting the Department of Public Hygiene to start importing incinerators to replace the old ones.

Initiatives to stop waste incinerators in Thailand

Anti-incineration campaign in Thailand started since 1994 as integral part of new social movement initiated by the Assembly of the Poor.

In 1999 Greenpeace Southeast Asia together with NGOs folks such as Campaign for Alternative Industry Network, Foundation for Consumer, Phuket Environmental Club, again, start working on incineration issue as part of toxic pollution work by highlighting possible health and environmental impact of existing MSW incinerator in Phuket and Samui island. The campaign work is ongoing and highlighting social, economic and environmental aspect of waste management and the role of international financial institute and TNCs in dumping of incinerator as dirty technology in Thailand.

The campaign work has done success at certain level. For example, Japan Bank of International Cooperation (JBIC) delays to provide loan for proposed incinerator in Bangkok right after action and activities during Stockholm POPs conference. Growing awareness of people who is supposed to be possible victim of incineration emission.

Anti-incineration campaign work hasn't been moving forward enough, this because of a number of NGOs pay attention on environmental issue but very few of them concentrate in waste matter particularly waste incineration. More networking with NGOs need to be addressed.

Campaign to promote non-burn alternatives

There are various civic group in Thailand trying to implement waste management project in an effective way such as Garbage for Egg Project, Recycling Business Center in Pitsanulok province, Yala Municipality, The 3-wheel cycling-itinerant buyer group of Khon Kaen, Pathom Asoke village, Wat Suan Kaew, Garbage Bank group in Bangkok. It was reported that there were more than 62,000 scavengers in Bangkok – quite big in size and active in their operations – these people contribute a lot of benefits to the environment and economy of Thailand.

There are many more type and forms of informal education system that can be applied in waste management field. For example, Thai military group and Bangkok Municipality launched a pilot project to practice composting method.

In Thailand, the potentials for recycling and composting are very high. Most organic waste is not yet utilized properly. It become more clearly seen that the community based business is the good alternative for waste disposal and income earning (sales of compost and microorganism substances, recycled materials and products, and processing of foods)

The pilot project of community-based waste management will be launched by the Campaign for Alternative Industry Network (CAIN) soon in Surat Thani province. Status of Waste Incineration Schemes in Thailand

List of Incinerators in Operation, Being Constructed or Proposed in Thailand

Name	Status	Type of waste	Capacity	Costs (million USD)	Remark
Phuket Municipal Waste Incineration Plant	Operational	MSW	250 ton/day	25	Contractor – MC Incinerator and Mitsubishi Industry. Operated by Palcon-Monteney
Samui Municipal Solid Waste Incineration Plant	Operational	MSW	140 ton/day	3.5	Contractor – NKK Engineering. Operated by Palcon-Monteney
Waste-to-Energy Plant in Chaeng Mai	Canceled (because of local protest)	MSW	300 tons/day	50	Svaerner Enviro Power, a Swedish subsidiary of the Norwegian engineering company, has been working with the Provincial Electricity Authority and intended to build 40 incinerators over the course of ten year
On Nut Waste-to Energy Plant Phase I (Bangkok)	Proposed	MSW	1350 tons/day	125	Source of loan – JBIC
On Nut Waste-to Energy Plant Phase II (Bangkok)	Proposed	MSW	1350 tons/day	125	Source of loan – JBIC
Nongkhaem Waste-to-Energy Plant (Bangkok)	Proposed	MSW	1350 tons/day	125	Source of loan – JBIC
Tha Reang Waste-to-Energy Plant (Bangkok)	Proposed	MSW	1350 tons/day	125	Source of loan – JBIC
BMA Hospital Waste Incinerator	Operational	Medical Waste	20 tons /day	3.0	Australian Technology
Mobile Incinerator	Unknown	Medical Waste		0.2	Donated by Kayowa Kako Co.

Royal Palace Incinerator	Unknown	Solid Waste	Unknow n	Unkno wn	Gifted by the President of Finland using Finnish equipment and technology from IVIO and ECOTEC.
Bang Poo Industrial Waste Incinerator	Proposed	Industria l Waste	10,000 - 50,000 tons/year	5.5	Unknown
Amata Nakhorn Industrial Estate, Chonburi	Operational	Solid waste	9 tons/day	Unkno wn	Kijja Consulting Engineers MMC-750
Chonburi Industrial Estate (Bowin), Chonburi	Currently shut down, as it reached the end of its operating life in May 2000	Solid Waste	6 tons/day	Unkno wn	Kijja Consulting Engineers IMC-500
GK Land Industrial Park, Rayong	Undergoing commission ing. Not yet fully operational due to lack of waste.	Solid Waste	-	Unkno wn	Hovelwerk AG Type GG24/BS72/ TR24 two stage incinerator
Gateway City Industrial Estate, Chachoengsao	Operational	Solid Waste	20 tons/day	Unkno wn	Kijja Consulting Engineers
Laem Chabang Industrial Estate, Chonburi	Not in use as not economical to operate.	Solid Waste	8 tons/day	Unkno wn	UNKK
Rojana Industrial Park, Rayong	Proposed.	Solid Waste	Up to 4 tons/day	Unkno wn	Goshu Goshan
Siam Eastern Industrial Park, Rayong	Operational	Solid Waste	7 tons per day, 1 day per week	Unkno wn	K.K. Katotekko Burner Seisakusho Co. Ltd. Model GPN 20

Wellgrow Industrial Estate, Chachoengsao	Operational	Solid Waste	Up to 14.7 tons per day, six days per week	Unknown	Goshu Goshan CX-500

Source : Greenpeace, CAIN.

List of Companies Entering Thailand and the Technologies They are Pushing/Selling

Name	Type of Business	Remark
Thammasorn Co., LTD.	Design, production and installation of MSW management system	Sells pyrolytic incinerator, mobile incinerator, cremator
GENCO	Service and treatment of industrial waste	Proposed to build hazardous waste incinerator
Consulectra Unternehmensberatung GmbH, Knoten Weimer and Electromac	Co-operation for pilot project of integrated waste treatment in Chonburi province	Includes a proposed incinerator in this project
Macro Consultant	F/S, EIA study for waste treatment system	
Saengvit Co.,LTD.	Import scientific instruments from USA and Europe	Sells so-called "Hitemp Technology" incinerator
Term Engineering Co., LTD.	Import various type of incinerators	Includes MSW, medical and industrial waste incinerators
Royal Equipment Co.	Sales of various kind of waste management equipment	Includes equipment for rotary kiln incinerator
Hitachi Zosen Corporation	Waste-to-energy company	Has 18 overseas offices, including Bangkok
Siam Cement Co.	Cement kiln	Its cement kiln has been used to burn industrial waste
EMCON/OWT/The IT Group	Solid waste management industry	Involved in Landfill Gas Compression Treatment, Landfill Gas-to-Electricity in Hongkong and Kuan-Yin Industrial Waste Incinerator in Taiwan
CDM	Environmental consultant	Service, design, construction and operation of waste-to-energy plant

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Thai Green Novation	Design and production of Thai incinerator	
NKK Engineering (Thailand)	Waste-to-energy company	Service and construction of stoker, fluidized bed, rotary kiln, flue gas treatment, ash melting, RDF
Appliance Technology Supply	Environmental service	Includes incinerator
Pollution care	Production, service and sale of incinerator	Includes municipal, medical waste and industrial waste incinerator and cremator
Eurothai Engineering	Installation of waste incinerator	Sells pyrolytic incinerators with optional Hoval waste head boilers

Source : Handbook of Grand Exhibition on Solid Waste Management Technologies in Bangkok, Thailand. 2-4 March 2001.

Beautiful Taiwan Foundation

Taiwan

Beautiful Taiwan Foundation is a private foundation and established from Beautiful Taiwan Foundation is a private foundation and established from 1987. Our mission is to encourage the protection and preservation of the environment. As a NGO/NPO we do our best in creating different education programs help people to know the right thing and right action about environmental protection.

Campaign For Alternative Industry Network

Thailand

The Campaign For Alternative Industry Network (CAIN) works on industrial pollution issues in Thailand. It was established in 1998 as a development from the Chemical Toxic Committee, which was formed in 1991 after the warehouse fire and chemical explosion at Klong Toey port in Bangkok. The main interests of CAIN are monitoring and campaigning on industrial expansion policies and the impacts of hazardous substances and industrial pollution on ecosystems and local communities. The group also promotes alternative approaches to industrialization based around human and community rights, sustainable development and grassroots empowerment. CAIN's main project at the present time is the implementation of the 'Industrial Pollution Watch' (IPW) program, which commenced in 1998. IPW's objectives are to increase support, provide information, and build alliances between various groups who are working to tackle industrial pollution problems.

Cavite Green Coalition

Philippines

The Cavite Green Coalition is as multi-sectoral alliance of different non-governmental organizations in the province of Cavite, Philippines working for the protection and defense of the natural and living environment of the people. The Coalition was officially launched on 7 February 2001 after more than a year of struggle against a proposed mega-landfill project in a watershed area in Cavite. At present, the Coalition is preparing itself to tackle other ecological concerns of the province, while it continues to focus its main concern in pushing for the implementation of the Solid Waste Management Law, which was recently signed by the Philippine president last January 2001.

Community Sanitation and Recycling Organisation

Cambodia

The Community Sanitation and Recycling Organisation or CSARO is an NGO in Cambodia that focuses on community-based solid waste management and community-level sanitation and infrastructure provision. It conducts public awareness programs on environmental and public health issues and the implications of inappropriate waste disposal. CSARO activities developed out of a number of comprehensive studies on existing waste management practices and on the working and living conditions of informal waste pickers in Phnom Penh. Based on similar experiments in south Asia, CSARO plans to form an organization of waste pickers and get neighborhood associations to hire their services on a professional basis. CSARO intends to initiate collection and recycling program with urban poor waste pickers that will allow for both social and economic improvements for the waste pickers and their families. CSARO also hopes to either adapt or develop recycling technologies and income generating activities that can be used in Cambodia.

Consumers' Association Of Penang (CAP)

Malaysia

The Consumers' Association Of Penang (Cap) in Malaysia is a grassroots, non-profit, non-government organization established in 1970 to give a voice to the little people. It fights for the rights and interests of all consumers through research, educational and representational activities. It is dedicated to helping people become more responsible consumers and to protecting them from abuse and malpractice in the marketplace. It defends consumer rights through its complaint action service and public interest litigation. In the field of environmental protection, CAP is a fearless advocate of the people's right to a healthy and sustainable environment. It has championed the interest of citizens and communities against toxic pollution and unsustainable use and management of land and other natural resources. CAP publishes an extensive range of educational materials such as the popular consumer newspaper "Utusan Konsumer," pamphlets used in life-skill training courses and books. CAP's publications, particularly the newspapers and the pamphlets, are printed in English, Malay, Chinese and Tami.

Environmental Foundation Ltd. (EFL)

Sri Lanka

The Environmental Foundation Ltd. (EFL) is a non-profit public interest law group in Sri Lanka, working for environmental conservation, sustainable development and related human rights through legal means. Established in 1981, it is the oldest public interest legal firm in Asia. EFL seeks to implement its objectives primarily by way of environmental research and advocacy and litigation in the courts. The EFL has fought several environmental issues both outside and in courts in Sri Lanka. Its activities include environmental legal education, mediation and assistance. It also undertakes environmental planning, lobbying, advocacy, public campaigns and local networking. It maintains a community environmental laboratory and library.

Environment and Public Health Organization (ENPHO)

Nepel

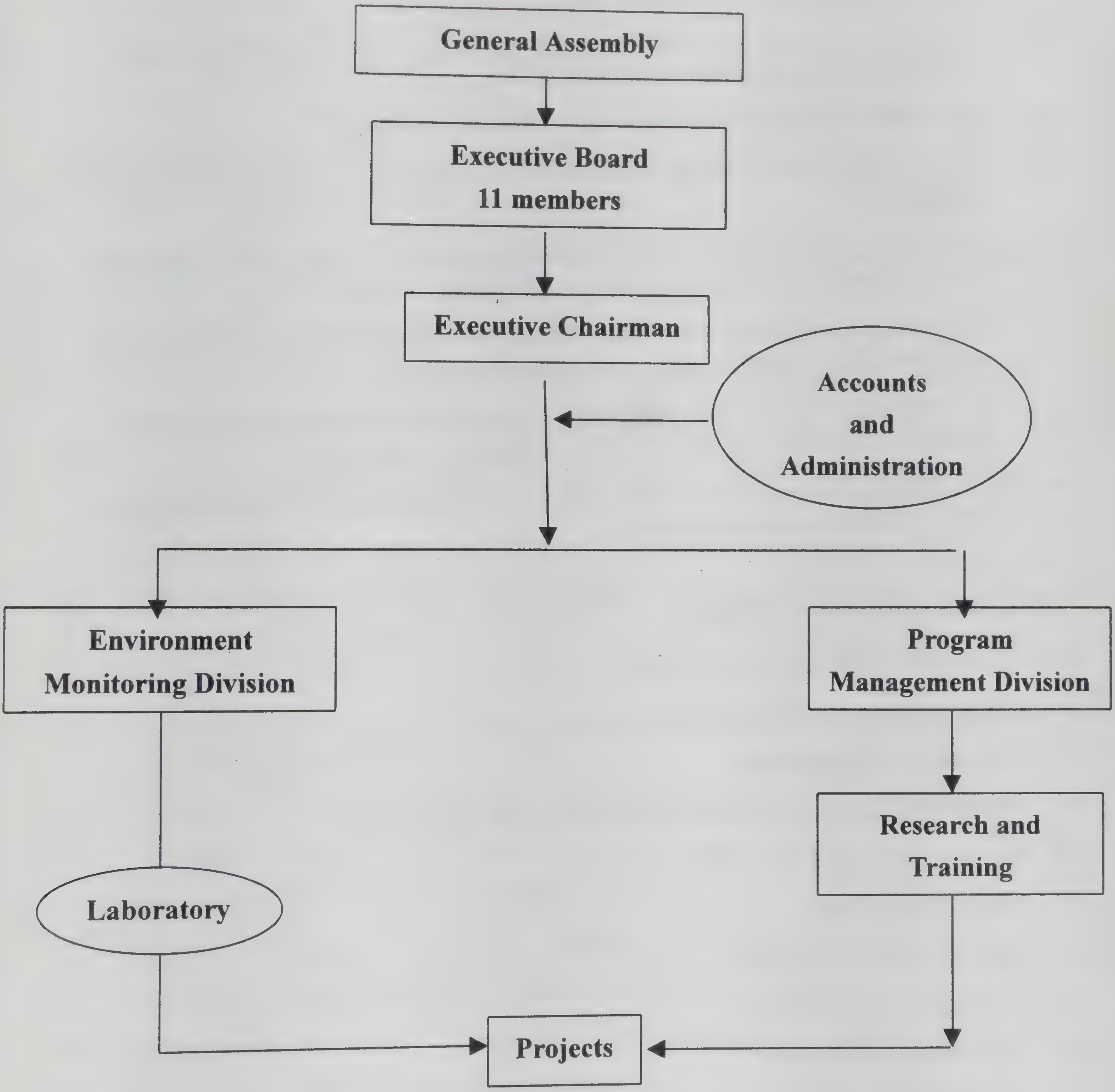
Name	:	***Environment and Public Health Organization (ENPHO)***
Address	:	**Baneshwor, Thapagaon, P.O. Box 4102, Kathmandu - 10 Nepal, Tel : 491052, 491376** **Fax : 977 - 1- 491376** **E-mail: enpho@mail.com.np**
Legal status	:	**Registered in Local District Office Social Welfare Council.**
Registration Number	:	**CDO - 108/047/048** **SWC - 283/047/048**
Registration date	:	**1990**

DiSvi, an Italian International NGO resumed its activities in Nepal in 1986 with an objective of assisting the HMG line agencies in the field of water and sanitation and thereby improve health status of the people. It first conducted Health Education Service Project with a variety of activities like making video films, installing drinking water schemes and water quality assessment. For the latter purpose, a laboratory was set which was well equipped and first of its kind in Nepal.

At the end of 1990 the project phased out and there was a problem of continuation of the laboratory. Need of an agency was felt which could conduct the program and keep its service alive. In order to solve these issue, the existing DiSvi staffs who had worked in the laboratory came out with an idea of establishing an NGO, the Environment and Public Health Organization (ENPHO). It was legally registered in Local District Office (a governmental unit) and Social Welfare Council (then Social National Coordination Council). ENPHO's proposal for running the laboratory by providing analysis services and also working voluntarily for community based programs was accepted by DiSvi and handed over the laboratory. Since then ENPHO has been running the laboratory together with other activities related to environment and sanitation.

Altogether there are 53 members of ENPHO who are from various technical and non-technical fields. The General Assembly makes the major decisions on policy

issues. The Executive Board consist of 11 member headed by the President. The organization consists of three major departments: Environmental Monitoring Division, Research and Training Division and Program Management Division (see Organizational Structure of ENPHO).



Organizational Structure of ENPHO

OBJECTIVES

- To conduct investigation on environmental pollution and its associated public health impacts.
- To assess urban and rural drinking water supplies in order to maintain the quality of the supply system.
- To conduct research on water, wastewater, soil, air and noise pollution and its associated adverse impacts.
- To conduct activities for the protection of water resources.
- To carry out and participate in different programs to check water-related epidemics.
- To develop and promote appropriate technologies on water and wastewater treatment, solid waste management and air emission control.
- To organize workshops, seminars, training and demonstrations to raise public awareness for the improvement of environmental quality.
- To implement integrated community development programs by focusing on drinking water, environmental health and sanitation activities.
- To provide services in the above fields to the government, INGO, NGOs and other social and private institutions.

FIELD OF SPECIALIZATION

⇒ Water and wastewater investigations

⇒ Drinking water quality management

⇒ Wastewater Management

⇒ Designing Constructed Wetland for Wastewater Treatment

⇒ On-site Wastewater Disposal

⇒ Waste Management

⇒ Lake and Pond Restoration

⇒ Community Consultation

⇒ Air Quality Assessment

⇒ Health and Sanitation Education

⇒ Health Impact Assessment

⇒ Environmental Impact Assessment

⇒ Trainings

COUNTERPARTS

ENPHO has cooperated and collaborated in many studies and activities with central government, local government, national and international non-governmental organizations.

1. Asia Foundation - Waste minimization through NGO-Business Partnership program
2. Association of Craft Products - Wastewater Treatment
3. Department of Water Supply and Sewerage - Rural water quality studies
4. Department of Housing and Physical Planning - Air Pollution
5. Dhulikhel Hospital - Wastewater Treatment Plant
6. DiSvi - International Cooperation (Italian International Organization) - Water quality monitoring and community development program
7. East Consult - Pokhara Environment Improvement Project
8. German Technical Cooperation (GTZ) - Wastewater investigation
9. German Volunteer Service - Water quality studies
10. Institute for Legal Research and Resources (ILRR) - NGO-Business Environmental Partnership Project
11. IRC - Holland - Workshop and training on wastewater management
12. Japanese Red Cross Society - Water Quality Monitoring
13. Kathmandu Metropolis - Environmental studies, training on water and sanitation
14. Lutheran World Service - Water quality monitoring and management at Bhutanese Refugee Camp
15. Ministry of Education - Non - formal literacy program
16. Ministry of Environment - Ground water monitoring
17. Ministry of Health - Water borne epidemic control
18. Ministry of Forestry - Industrial wastewater and river pollution studies
19. National Planning Commission - Heavy metal pollution studies
20. Nepal Red Cross Society - Training on water, health and sanitation.
21. Nepal Water supply Cooperation - Urban water quality monitoring
22. PLAN International - Water quality monitoring; health and sanitation program and survey for water supply schemes
23. Planete Enfants - Training on water quality assessment and wastewater management.
24. UNDP - The Urban Governance
25. UNICEF - Rural water quality studies
26. United Mission to Nepal - Chlorination and Water Quality
27. World Conservation Union (IUCN) - Limnological Studies

28. Water Aid - Training on water quality

MAJOR ACTIVITIES CONDUCTED

Surface and Wastewater Studies

1. Pollution monitoring of Bagmati River and its tributaries in collaboration with DiSvi-International Cooperation (1988 to 1993)
2. Pollution monitoring of Dhobikhola and Khaire Khola in collaboration with Tribhuvan University, 1988
3. Phewa lake pollution study in collaboration with Asian Institute of Technology, for Masters Student, AIT Bangkok, Sept - Dec. 1989.
4. Pollution of the ponds - Ranipokhari, Kamal Pokhari and Taudaha in the Kathmandu Valley in collaboration with Botany Department, Tribhuvan University, 1990
5. Water quality analysis from Begnas and Rupa lakes, work assigned by Ministry of Forest and Environment, 1992.
6. Heavy metal pollution study on water and wastewater in Kathmandu valley. Study carried out for National Planning Commission, 1992.
7. Analysis of domestic wastewater and effluents from different factories (carpet, distillery, brewery). Study conducted for Bagmati Basin Watershed Management Project, 1993.
8. Limnological Investigation of Gosainkunda and Bhairab Kunda. Study conducted for IUCN-Nepal, 1995
9. Water Quality Analysis and Monitoring Study of the Shivapuri Watershed Area (Phase I). Work assigned by The Shivapuri Integrated Watershed Development Project of Food and Agricultural Organization of the United Nations (FAO, 1996).
10. Water Quality Assessment of Lake Begnas & Rupa. Work assigned by CARE-Nepal, 1997.
11. Water Quality Analysis and Monitoring of the Shivapuri Watershed Area (Phase II). Study conducted for The Shivapuri Integrated Watershed Development Project of Food and Agricultural Organization of the United Nations (FAO, 1997)

Drinking Water Quality Studies

1. Water Quality Monitoring of Kathmandu City Water Supply (1989 to on going).
2. Potability Test for Rural Drinking Water Schemes Established by PLAN International Nepal (1989 - 1994).
3. Water Quality Assessment for Terai Tubewell Project. Study carried out for UNICEF (1990).
4. Water Quality Monitoring of Stone Spouts in Kathmandu City (1989 to 1990)
5. Water Quality Testing in Ilam (Eastern Region of the country). Study carried

out for UNICEF - Nepal (1990 & 1991).

6. Water Quality Assessment of Tubewells in Reconstruction and Rehabilitation project area (Eastern Region of the country). Study conducted for DiSvi-International (1990 and 1991).

7. Water Quality Testing of Different Water Sources in Siraha District. Study carried out for DiSvi - International (1991).

8. A case study on drinking water quality of Pokhara Municipality. Work assigned by UDLE/GTZ (1991).

9. Water Quality Testing of Bhutanese Refugees Camps to maintain the drinking water quality. Work assigned by Lutheran World Service (1992 - 1993).

10. Water Quality Monitoring of Patan City Water Supply (1995).

11. Water Quality Testing from Different Rain Water Collection Systems and other water sources in Dugha VDC Gulmi (Mid Western Region). Work assigned by HMG/FINNIDA (1996).

12. Diagnostic Survey studies of drinking water situation in the SC JAPAN's project area. Study carried out for Save the Children JAPAN. (1997).

13. Carried out Ground Water Quality monitoring in Kathmandu Valley. Study conducted for Institutional Strengthening of Ministry of Population and Environment (ADB TA 2847 - NEP), 1998.

14. Arsenic Investigation in ground water of eight districts of Terai Region (Bara, Parsa, Rauthat, Nawalparasi, Rupendedhi, Kapilbastu, Banke and Bardia (Jan to July 2000). Study carried out for Nepal Red-Cross Society/Japanese Red Cross Society.

Air Pollution Studies

1. Air Quality Assessment in Kathmandu. Work assigned by Ministry of Housing and Physical Planning (1993).

2. A Survey of Brick Industries in the Kathmandu Valley. Work assigned by Metropolitan Improvement Project - World Bank (1993).

Wastewater Treatment

1. Design and Implementation of Dhulikhel Hospital Wastewater Treatment Plant through Constructed Weland System. The technology introduced first time in Nepal (1997).

2. Design and Implementation of Wastewater Treatment Plant for Association for Craft Products (1997).

3. Design a Treatment Plant for Leachate and Septage through Constructed Wetland for Pokhara Environment Improvement Project (1998).

4. Design and Implementation of Constructed Wetlands for Wastewater Treatment of Malpi-International School, Panauti (2000).

5. Design and Implementation of Constrctred Wetland for Wastewater Treatment of Sushma Koiral Memorial Hospital, Sankhu (2000)

6. Design a Constructed Wetland for Kathamndu University, Dhulikhel (2000)

Medical Waste Management

1. Medical Wastes Disposal Incinerators were build and trained the staff for operation and maintenance in six Health Post area of Siraha District in collaboration with Save the Children US, Siraha (1996).
2. Medical Wastes Disposal Incinerators were build in additional six Health Post area of Siraha District in collaboration with Save the Children US, Siraha (1997).
3. Feasibility Study and EIA of Medical Waste Management System for Kathmandu. Program ongoing for Kathmandu Valley Mapping Program/KMC (2000 to date).

Survey of Water Supply Scheme

1. Survey, design and estimate of gravity flow drinking water system and spring protection in Bhojpur district covered by PLAN program area. Survey conducted for PLAN International Nepal, Biratnagar Office (1996).
2. Carried out baseline survey of CDD/Water pilot project under CBFH Project in Siraha. Survey done for Save the Children US (SC/US), Himalayan Field Office.
3. Feasibility Study and Detailed Design of Water Quality Improvement Sub-Projects: Package 1. Survey conducting for Department for Water Supply and Sewerage (2000 to date).

Environmental Studies

Provided consulting services as a partner of East Consult (p) Ltd. for Survey, Design and Construction Supervision of Septage and Solid Waste Management Project for Pokhara Sub-Metroplis (1997).

Study in reduction of pollution and waste in the Himal Cement Company Limited, Kathmandu, Nepal. Study conducted under the grant of NGO-Business Environmental Partnership Program (US-AEP), 1997 to 1998.

Public Health Studies and Surveys

1. Conduction of Focus Group Discussion on HIV/AIDS Education and Prevention Project conducted by the Employer in Central Jail and Bhadragol Jail in Kathmandu. The study conducted for Women's Inspiration Community (WICOM), 1996.
2. Mid term 30 Cluster Survey of CS XI Project in Nuwakot. Project assigned by Save the Children US. (1997)
3. Conduction of Impact Evaluation Study on HIV/AIDS Education and Prevention Project conducted by the Employer in Bajung, Deurali and Deupur VDCs and School/Campus in Kusma of Parbat District. The study conducted for Women's Inspiration Community (WICOM), 1997.
4. Carrying out the study aiming at exploring the value given by beneficiaries and working partners to BNMT services. Study conducted for Britain Nepal Medical Trust (BNMT), 1997.
5. Conduction of the diagnostic survey research on Social Marketing in Ilaka no. 1, 12 and 13 of Nuwakot District. Study conducted for Save the Children US, 1996.

Implementation of drinking water, health education and sanitation projects

1. *Health and Sanitation Education in Kadmaha village of Morang District* : Carrying out health and sanitation education project in Kadmah village of Morang district under the financial contribution from DiSvi-International. The objective of the project was to develop health education materials and to aware the people about use of latrines. Appropriate pit latrines, operational and maintenance manual was also developed during the program (1992 -1993).
2. Environmental Sanitation Program at Champadevi VDC, Kathmandu : Under the financial support from PLAN - International Nepal, this project was completed. Health and Sanitation Education, Latrine installations with subsidized rate were the major activities of the project. Almost all community from this VDC was benefited with single or double pit latrines during project period (1995 to 1996).
3. Siraha Drinking Water Health Education and Sanitation Project : A comprehensive three years project was launched under the financial support from DiSvi-International Cooperation in 13 Village Development Committee of Siraha District. The goal of the project was to improve the drinking water supply facilities, sanitary conditions and public health status of the local people. Tubewell installation, Health and Sanitation education, latrine construction, technical and medical support to the health post and primary school improvements were the major activities of the project (1993 to 1997).

Sanitation and Health Education Activities:

1. Study on Gastroenteritis epidemic in mid western region of Nepal (Rukum and Dang), 1991.
2. Water Quality Checking of City Water Supply, Restaurants and School in Kathmandu valley during the summer season in collaboration with Ministry of Health (1990 to 1995).
3. Chlorination of different drinking water sources at Bhutanese Refugee camps to control water borne epidemics (1992 - 1993).
4. Distribution of medicines and chloriniation of different drinking water sources at Rukum and Dang during the out break of Cholera (1991)
5. Setting up chlorination management plan of water tanks at Bir Hospital, Kanti Hospital and Army Hospital (1992)
6. Chlorination of dugwells at several villages of Lalitpur District (1994 - 1995)
7. Production of kit for free residual determination in water
8. Production of chlorine solution to disinfect household drinking water

Training

a) *ENPHO imparted training on :*

1. Water quality assessment and management of wastewater training given to participants from Tibetan refugees organized by PLANETE ENFANTS, a French Organization (1995)
2. Theoretical and practical training on laboratory techniques of water quality testing to the personnel from Dept. of Water Supply, Nepal Water Supply

Corporation, FINNIDA, Bhutanese Refugee project - Lutheran World Service (1994)

3. Importance of water quality and method of sample collection for water analysis to the staffs from different project involving in water supply
4. Training on chlorination practices in Dugwell water for community from Siddhipur, Imadol and Tikathali VDC of Lalitpur district (1995).
5. Training to the supervisors, community motivators and ward promoters on environmental health and sanitation education. The training was organized for Metropolitan Infrastructure Improvement Program (MIIP), Kathmandu Metropolis (1997).
6. Training to the urban health clinic in-charge and health workers, Kathmandu Metropolis on drinking water management and treatment in household level. The training was organized for Public Health Department, Kathmandu Metropolis (1996).
7. Air Quality Monitoring and Management Training (November 1999).
8. Training on Water and Wastewater Management for Engineer's, Nepal Water Supply Corporation (2000).

b) *Participated as resource person on :*

1. Women Worker's Refresher Training (Organizer : UNICEF)
2. Environmental Sanitation Training for trek cooks and waiters (Organizer : Hotel Management and Tourism Training Center)
3. Technical aspects of drinking water to sub-overseer training (Organizer : Water Aid)
4. Overseer and Field Supervisor's training (Organizer : Nepal Red Cross Society)
5. Trainer's Training on Drinking Water Quality Monitoring and Surveillance (Organizer : WHO/DWSS)

c) *Training materials development :*

1. Training Package on Environmental Sanitation For Trek Cooks and Waiters of Hotel Management and Tourism Training Center (Collaborator : IUCN)
2. Development of Teaching Aid (Flipcharts, booklets, posters) to convey health education messages.
3. Training Manual of Water Quality Assessment and Management of Water Wastewater

PROPERTY AND FACILITIES

a. *Land and Building:*

1. A plot with and area of 6503 sq. ft at New Baneshwor, Kathmandu.
2. A three story building

b. *Research Laboratory:*

Atomic Absorption Spectrophotometer, UV Spectrophotometer, pH meter, Conductivity meter, Iron Selective Electrodes of NH_3, NO_3, F1, Fe etc. Physical

balance, Reflux apparatus set, BOD incubators, Manometric BOD sets, Autoclaves, Hot air oven, Water bath, Bacteriological incubators, Filtration Units, Deionizer set, Double Distillation set, Stereoscopic Microscope, Compound Microscope, Sieve, sampler for invertebrate collection, Refrigerators, High Volume Air Sampler, Necessary reagents, Field test kits for water analysis.

c. ***Data Processing and Dissemination:***

Computers – 7, Laser printer – 3, Photocopy machines – 1, and Audio-visual equipments

d. *Engineering Equipments:*

Theodolite, Lettering set, Pedometer, Measuring tape, Flow calculator etc.

e. ***Vehicles:***

A Car, 3 Motor Bikes

f. Staff Members

Name	Qualification/Experience	Position
Dr. Roshan Raj Shrestha	Ph.D. Applied Natural Sciences / 12 years	Executive Chairman
Dr. Narayan P. Upadhyaya	Ph.D. Water Pollution / 35 years	Director, Environment Monitoring Division
Dr. Suman K. Shakya	Ph.D. Applied Natural Sciences / 10 years	Director, Program Management Division
Ms. Rosha Raut (Khadka)	M.Sc. / 7 years	Senior Research Officer
Mr. Makhan Maharjan.	M.Sc. / 3 years	Laboratory In-charge
Ms. Arinita Maskey	B.Sc. Human Ecology / 2 years	Asst. Program Officer
Ms. Anjali Manandhar	B.Sc. Environmental Science / 2 years	Asst. Research Officer
Mr. Mingma G. Sherpa	B.Sc. Environmental Science / 2 years	Asst. Research Officer
Mr. Rajesh Adhikari	B.Com ./ 5 years	Account cum Admin officer
Ms. Anita Shrestha	B.Com. / 2 years	Secretary
Ms. Pramila Amatya	B.Com. / 3 months	Secretary
Mr. Manorath Bajgain	S.L.C. / 14 years	Lab Technician
Mr. Bishnu P. Koirala	S.L.C. / 4 years	Asst. Lab Technician
Mr. Bhaj Ram Maharjan	S.L.C / 2 years	Lab boy
Mr. Shiva Das Shrestha	Literarte / 5 years	Driver
Mr. Nakul Khadka	Literate	Peon

Mr. Dasrath Khadka	Literate	Night Watchman

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Name	Qualification	Position
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Ms. Shova Khanal	MPH	Research Officer
Mr. Jeevendra Ghimire	Diploma	Research Officer
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Mr. Devendra Shrestha	B. Com.	Accountant

Visiting Consultants

Name	Expertise
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Mr. Bhushan Tuladhar	Environmentalist
Mr. Rajesh Manandhar	Solid and Liquid Waste Management
Mr. Yagya B. Shrestha	Water Supply Sanitation
Mr. Jhalendra Shrestha	Environmentalist

Executive Board 1999-2001

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	- Mr. Charles Pradhan
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PUBLICATION

1. Pollution Monitoring of Bagmati River and its Tributaries (1988)
2. Water Quality Monitoring of Kathmandu City Water Supply (1989)
3. Water Quality Monitoring of the stone spouts of Kathmandu city (1990)
4. Water Quality Assessment for Terai Tubewell Project (1990)

5. Water Quality Testing in Ilam - I (1990)
6. A Brief Report on Cholera Outbreak (1990)
7. A Case Study on Drinking Water Quality of Pokhara Municipality (1991)
8. Water Quality Testing in Siraha District, Sector no. 2 (1991)
9. Water Quality Testing in Ilam - II (1991)
10. Report on Water Quality Testing Programs (1991)
11. A Case Study on Gastroenteritis Epidemic in the mid Western Region of Nepal (Rukum & Dang) - 1991
12. Tubewell Water Quality Testing in R & R Project area (Biratnagar) - I, 1991
13. Monitoring of Kathmandu City Water Supply with Reference to Chlorination & Microbiological Quality (1991/92)
14. Tubewell Water Quality Testing in R & R project (Biratnagar – II, 1992)
15. A report on Bacteriological water Quality study at Bhutanese Refugee Settlement Sites & in the Kankai River (1992)
16. A report on Heavy Metal Pollution in Kathmandu Valley and its impact on health (1992)
17. Air Quality Assessment in Kathmandu (1993)
18. A Survey of Brick Industries in the Kathmandu Valley (1993)
19. A Review of Limnological Studies and Research in Nepal (1994)
20. Bacteriological Quality of Drinking Water in Kathmandu City. A Review of ENPHO/ DiSvi Reports 1988-1992. (1995)
21. Limnological Investigation of Gosainkunda Lake and Impact of Janai Purnima Festival (1995)
22. Trend of Degrading Water Quality of the Bagmati River (1988 - 1995) 1996
23. Bacteriological Quality of Drinking Water in Kathmandu & Patan City (1996)
24. Report on the Water Source Monitoring Programm for the Shivapuri Watershed by Assessing Water Quality (1st Phase)
25. A Survey Report on Water Quality Testing from Different Rain Water Collection Systems and Other Water Sources in Daugha VDC, Gulmi
26. Diagnostic Survey Study of Drinking Water Situation in the SC/JAPAN'S
27. A Report on Water Quality Assessment of Lake Begnas and Rupa. 1998.
28. Monitoring and Assessment of Water Quality in the Shivapuri Watershed (HMG/FAO, 1997)
29. Monitoring of Groundwater Resources in the Kathmandu Valley. 1999.
30. Reduction of Pollution and Waste in the Himal Cement Company Limited, Kathmandu, Nepal. 1999.

Greenpeace International

Greenpeace International, founded in 1971, is an independent and non-political organization campaigning to ensure a just, peaceful and sustainable environment using non-violent direct action. The organization has significant presence in over 40 countries around the world and is funded almost entirely by the contributions of its more than two million supporters from 160 countries. Greenpeace focuses on six campaign areas such as climate, oceans, toxics, nuclear power, forests and genetic engineering. The anti-incineration campaign of Greenpeace in Asia is aimed at stopping the migration and further entrenchment of dirty industries and technologies such as incinerators to the region. It promotes the implementation of clean production strategies and ecological, non-incineration alternatives to waste management and disposal. Represented at the WNA Taiwan 2001 are the Greenpeace activists from China (Hong Kong), India, Japan and Southeast Asia (Philippines and Thailand).

Greenpeace Southeast Asia.

Mission statement : "Safeguard environmental right, Expose and stop environmental crimes, Advance clean development."

Greenpeace Southeast Asia is committed to achieve our mission through creative, non-violent direct action.

Greenepace Southeast Asia's anti-incineration campaign is aim to:

stop the migration and further entrenchment of dirty industries and technologies such as incinerators to the region, by highlighting the polluting legacy of foreign companies, and the role of international aid, financing and development agencies in propagating polluting products and technologies.

put toxics pollution high on the political/social agenda and secure , both at the national and regional levels, political commitments and legislation for the elimination of persistent poisons and toxic releases into the environment and the prevention of pollution.

ensure adoption and implementation of clean production strategies and ecological alternatives to dirty the dominant industrial pollution control models in the region with the corollary aims of promoting non-incineration alternatives for the disposal and destruction of wastes

"Waste Not Asia" as the hub of activist all over Asia and the Asian mode of GAIA has been playing crucial role to achieve those aim.

Green Citizens' Action Alliance

Taiwan

Green Citizens Action Alliance is the successor of the former TEPUTC (Taiwan Environment Protection Union Taipei Chapter). In December 1999, we adopted a new structure and new name.

The collusion of governments with corporate interests has forced the public to protect the environment through streets demonstrations and lobbying in the Legislative Yuan. GCAA's activities focus on social movements, to organize grass-root people,unify the force from every line, educate people, and spread the green ideas and knowledge.

Presently the GCAA is mainly engaged in work on anti-nuclear issues and energy policy. In the future we will begin to concentrate more on the issue of waste disposal and other environmental issues pertinent to Taiwan.

No Nuke:We will continue to advocate eliminate all nuclear power plants in Taiwan, including the Fourth Nuclear Power Plant which is presently under construction. We plan to produce a video program on the issue.

Zero Waste:We will continue to propose appropriate waste management policies, and provide grass-roots environmental programs for the public.

Future Outlook

- **Issue Coordination**
- **Links with Communities (Integration)**
- **Citizens' Actions**
- **Sustainable Society**

In the future we will also devote more time and energy to expanding our international links, and the sharing of resources and information internationally. Only through cooperation across boundaries will we be able to understand the world's ecosystem and word to preserve it for the benefit of all humanity.

Financial Affairs

- Supporting Membership

Monthly donations of NT$500, NT$1,000 and NT$2,000. In addition to enjoying all of the benefits of membership, a yearly conference is help for supporting members. Supporting members also receive publications produced by the GCAA, special gifts, and a newsletter of GCAA activities. The names of supporting members appear all of in GCAA's yearly reports.

✹Membership

One time membership donation of NT$500 and yearly membership donation of NT$1,200. Members are able to travel of eco-tours sponsored by GCAA,

✹Donations

Tax-deductible donations are welcome.

✹Sales of GCAA publications

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Green Formosa Front (G.F.F.)

Taiwan

Green Formosa Front (G.F.F.) is a non-government, non-profit organization established in 1997 in Taiwan by 50 young environmentalists including professors、journalists、doctors、engineers、social and environmental movement activists . GFF is a young and active organization, the average age of our members is roughly 32.

Grassroots, Activism and Progress

GFF is dedicated to defending the environment from reckless destruction in the name of economic growth. GFF stands by the simple but fundamental principle that the environment is to be shared by all the people of the world, and not monopolized or abused by a small minority. Our goal is to mobilize public awareness of the importance of environmental conservation through community participation, environmental policy research, legislative lobbying, and media advertising.

Focus Areas

1. Toxic Industrial Waste

Taiwan's economic growth over the past 50 years has brought wealth but also a polluted environment to the people. Industries with little commitment on resolving their toxic wastes continuously ignore the situation either intentionally or incapable of finding a solution. GFF was the pioneer in investigating the 1999 mercury waste incident (Formosa Plastic) in Cambodia and is making every effort to stop further waste dumping from industries.

2. Hillside Conservation

Conservation and protection of hillside slopes from irresponsible development (particularly residential) is one of the central focus areas for the GFF. Taiwan's population density is the second highest in the world, and there is growing pressure to build residential developments on hillside areas as opposed to remaining in the flatlands. The safety and security of hillside residential areas is a serious issue for residents, especially during typhoon season.

3. Organic Agriculture Development

In response to the global awakening of organic agriculture, GFF is involved in promoting organic agriculture development in Taiwan. The activities include promoting the organic fertilizer usage among farmers, assisting in the distribution

channel establishment, holding promotion fairs and discussion to consumers.

4. Community Living Quality and Cultural Conservation

GFF works with urban communities to design/organize quality living environment through various projects including community park, car/motorcycle parking, specific culture characteristics conservation, and recycle program set up. After the earthquake on the September 21, 1999, the restoration of rural community in the earthquake-hit areas has become one of the focus areas for GFF.

Good Policy for a Healthy Environment

GFF seeks to persuade key political decision-makers to establish environmentally friendly policies and regulations for Taiwan through public policy research. GFF conducts research on air pollution, recycling, radioactive wastes and contamination, and environmental impact assessment policy.

Global Thinking and Local Action: World Volunteers

GFF holds numerous focus group discussions and seminars to help build understanding of environmental issues. GFF is leading a program to recruit and train 600 community volunteers. Through volunteer action, participants can polish their thinking about the community and the future of the local environment, and eventually empower themselves for participation in public affairs.

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Guarding the Environment and Health of Toshima Network

Japan

This network was formed in 1997, when the government announced to citizens its plans to build a new incinerator. We oppose this, believing it is better to "reduce, reuse and recycle".

1200 citizens have petitioned the Environmental Dispute Coordination Commission of Tokyo, and 60 citizens initiated legal proceedings in Tokyo Local Court. We object to the proposal for the following reasons:

First, building an incinerator is unnecessary, because we already have sufficient facilities to burn our waste;

Second, incineration isn't safe;

Third, if we burn our resources, they are non-renewable -- gone forever;

Fourth, dioxin and ash are toxins released in the incineration to pollute our air;

Fifth, the plan wasn't approved democratically.

There have been 22 public commissions held in the last two and a half years. The commissioner issued recommendations to all interested parties, recommending total emissions every year. But the Toshima Incinerator project is proceeding nevertheless.

We are monitoring these emissions and intend to publish our findings.

On the lower left corner of the back cover is a picture of the Toshima incinerator. The chimney is 210 meters in height, mnaking it one of the world's largest incinerators.

Of paramount concern is the government plan to burn industrial waste in the incinerator. This would include wood chips from demolished houses. This wood is known to contain pesticides for white ants. When burned, this will release a great amount of toxic fumes into the atmosphere.

Japan Pops Elimination Network (Jpen)

Japan

The Japan Pops Elimination Network (JPEN) brings together various citizens' groups and concerned individuals in Japan to lobby their government to support the global action to free the environment of persistent organic pollutants (POPs). JPEN played an important role in raising public awareness and in pushing the Japanese authorities to back international effort to minimize and eliminate the production of dioxins, furans and other POPs.

Korea Waste Free Network

Korea

The Korea Waste Free Network (KWFN) is an active environmental network in South Korea that promotes genuine solutions to address the country's waste management problems.

Korea Waste Movement Network

Korea

The Korea Waste Movement Network is made up of about 270 member clubs representing women, consumers, civic and environmental groups in **South Korea**. It serves as a center for networking among NGOs dealing on waste issues. To facilitate its work, KWMN has created specialized committees for product packaging, landfill/incineration, food waste, toxic waste and policy counseling. Since 1997, the KWMN has initiated actions to stop waste incinerators in Korea. As a proponent for zero waste society, KWMN organizes public awareness activities, researches on alternatives, sets up recycling programs and influences policy deliberations on waste management. Its campaign for disposable waste reduction has achieved positive results with Lotteria, Korea's largest fast food franchise, opening a model outlet in Jongro, Seoul that uses non-disposable items in April 2001.

Meinung People's Association

Taiwan

■ The Making of Meinung Hakka

Geographically, the Hakka live on the wedge-like Meinung plain formed by the two-mile-wide Kaoping River running along its southern border, and two mountain ranges which, by running from the Yellow Butterfly Valley, the plain's north-easternmost edge, to the Kaoping River, close in the plain's east and west borders. The river and the mountains have allowed the distinct Hakka culture to flourish within a naturally divided ecosystem which limited outside interference from the Hokkien, who have historically occupied the areas on the side of these natural barriers. In the past twenty years, Meinung has become the most famous Hakka town in Taiwan, hailed as the community most illustrative of Taiwan's rich Hakka culture that originated in southeastern Mainland China. In the wake of rapid and broad-based industrialization and urbanization, many artists and novelists began to perceive and culturally Meinung as a major source for their nostalgia of an autochthonous culture.

Historically, Meinung has enjoyed relative independence from broader Taiwanese society. Its distinct culture, economic base, and unique geography have contributed to this independence. First, ethnically, Hakka Meinung is surrounded and isolated by Hokkien, the major ethnic group in Taiwan. Hakka and Hokkien are mutually unintelligible Chinese dialects, which have formed the basis of two very distinct cultures. These cultural and linguistic distinctions have led to many conflicts, the major ones being struggles over land, water for irrigation, and access to marketing facilities.

Second, economically, ever since its introduction into the Meinung area during the final stages of Japanese occupation, tobacco cultivation has dominated Meinung's economy. Meinung soon became the most important tobacco plantation in Taiwan, in terms of cultivation areas, production amount, and tobacco farming households. Geography is also responsible for tobacco's dominance in Meinung. The two mountain ranges block chill winters winds coming from northern Mainland China and render Meinung's winter weather more stable and warmer than elsewhere in Taiwan. The plentiful Kaoping River guarantees Meinung against winter drought, making Meinung suitable place tobacco cultivation in winter.

The social nature of the tobacco economy is different from other agricultural production in two respects. First, its production process is much more organized. In adapting to the labor-intensive process of tobacco cultivation, Meinung's tobacco farmers have developed a labor exchange system based on locality and extended-

family networks, that guarantees a labor source on the one hand and reduces production costs, on the other hand. Second, tobacco farmers do not need to look at the market to make their decisions regarding production. The Taiwan Tobacco and Wine Monopoly Bureau (TTWMB) assigns farmers yearly planting quotas, the number of plants, the total weight of final product, and its unit price. This freedom from market competition and fluctuation of prices has fostered a relative stability among Meinung's Hakka family. The absence of a need to deal with the broader market has helped developed Hakka social relationships through the production and reproduction of their socio-economic lives. Especially in the 1970s and 1980s when the majority of Taiwan's rural economy was seriously struck by the agriculture decline, Meinung, due to tobacco cultivation, and the guarantee from the TTWMB, was able to maintain its relative prosperity.

Meinung has been applauded for, and traditionally proud of, its educational achievements: out of its some 50,000 population, over 100 Ph.D. and thousands of Master and bachelor's degrees have been produced over the past forty-five years. Education proved to be a wise strategy for household investment because the money sent back by the well-educated younger generations holding nice jobs in urban cities helped maintain local living standards. More importantly, when the security of Meinung was threatened by state policies, the student's intellectual feedback also proved to be crucial for the protection of the Hakka homeland.

The relatively isolated geographical condition, the conflictual ethnic relations, and the social networks of tobacco economics have been interwoven in the creation of social relationship that distinguishes Meinung from other Taiwanese communities. The distinction is reflected in, and can be better described, by marriage. In Mylon L. Cohen's observation of one the major villages in Meinung in the 1960s and the early 1970s, marriages patterns in Meinung had already become almost endogamous.

People in Yen-liao voice their opposition to marriages between Hakka and non-Hakka; and they take the infrequent occurrence of such marriages as evidence that their sentiments determine marriage patterns. That marriages with Hakka not from the Meinung community are about as uncommon as those with non-Hakka indicates, however, that marriage patterns are not based exclusively on ethnic factors. (Cohen, 1976:41-42)

After the early phase of settlement, while the other Hakka areas in Taiwan continued to be connected to each other by forming broader marital regions and began to be gradually acculturated by the dominating Hokkien culture either by proximity or economics, Meinung's marital connection to the other Hakka areas in southern Taiwan was weakened first by the transpiercing Kaoping River and then by its relatively independent tobacco economics.

In comparison with other major crops grown in Taiwan, tobacco production requires by far the heaviest labor input. According to agricultural statistics (Lu, 1962:487-91), the labor demand before agricultural mechanization was greatly introduced in 1970s into rural areas was 789.0 workdays per crop per hectare for tobacco production, while the average workdays for two consecutive rice crops combined were 198.9. Even after rice production was overly mechanized, most of the labor process in tobacco production still remains unsubstituted. The greatest labor demand in an agricultural year would include two crops of rice, characteristic of much of rural Taiwan, and one of tobacco. Such a combination continues to dominate Meinung's agricultural patterns these days.

Tobacco also far exceeds all other crops with respect to the value of the main product and the percentage of field costs that comprises human labor. Although from tobacco cultivation farmers can receive the greatest profit, it also demands the greatest labor input. The most effective strategy for farmers to lower production costs while meeting labor demand is to fully exploit their family labor. This behavior is found in Meinung where labor intensity is the greatest in rural Taiwan and can easily exhaust members of the average family. Networks of labor exchange are then developed to supplement labor deficiency.

The most common form of cooperation is known as "labor exchange (kao-koung)"—simply an arrangement between families to swap a certain number of "koung," a term I translate as "workday," but which means more precisely "an able-bodied adult performing a full day's work at a given task." Tasks which require that several people work together for one or more full days are usually calculated in workdays; labor exchange is reckoned within the context of the same agricultural operation; workdays are not supplied in exchange for tobacco-sorting workdays. (Cohen, 1976:52)

Prior to the conspicuous mechanization of agriculture in late 1970s, labor exchange, especially that within the local genealogical group accounted for the major portion of non-family labor. More importantly, labor exchange overlaps and mutually intensifies with the traditional obligation between the genealogy-related families to provide assistance.

Thus, the intense social ties in Meinung were formed and accumulated around the interaction among the particular geographic characteristics, relatively independent economics, and isolated social relationship networks. Tracking and making reference to genealogical lines, two people unknown to each other can familiarize and establish their social relation easily. Mi-nung-ngin (person from Meinung) expresses, to them, not just where they are, but how they are. They share a strong sense of all Meinung people as a family, interwoven through reproduction and marriage.

The extraordinariness of Meinung's social ties can be witnessed in the numerous establishments of Meinung tung-hsiang-hui (club of fellow Meinung emigrants) by those Meinung emigrants who still have strong nostalgia from their early life experiences in Meinung. Although similar organizations are widespread among Chinese emigrants all around the world, their reference locality is mostly based on common province, city or county, not usually on a mere town. Meinung emigrants join with other non-Meinung Hakka emigrants in forming Hakka clubs. But interestingly, they always try to have their own tung-hsiang-hui formed, which is now ubiquitous in every major stop of Meinung emigrants. It has become a praiseworthy joke to the Meinung chauvinists that there is even a Meinung tung-hsiang-hui established right in Chi-shan, the adjacent Hokkien town to Meinung's west. As we will see in later analysis, the sense of locality and social ties tightly maintained in Meinung, contributed to the sustainable mobilization of the anti-dam movement and community movements of specific issues.

■ Social Transformation and Crises in Meinung

In 1966, the establishment of the Kaohsiung Export Processing Zone 60 kilometers southwest of Meinung drew 11,156 young members of the labor force from Meinung (Chung, 1995). They either non-tobacco planting family members looking for stable job opportunities or surplus tobacco-planting family laborers seeking to maximize labor value. The need and the conditions for concluding marital ties within the Meinung locality ebbed in face of new socio-economic situation. Since then, as elsewhere in rural Taiwan, better economic opportunities in urban cities and declining agricultural opportunities combine to draw a huge portion of the younger generation out of Meinung. Not only did the local density of marital ties in Meinung begin to loosen, but also the labor force that remained in agricultural production became aged with the serious lack of members of younger generation.

On January 1987, the future of tobacco economics was further dimmed by the opening of the domestic cigarette market to U.S corporations and the decrease in its price-guaranteed buying quota. Because of its dominating position in Taiwan's tobacco production, Meinung was hit the worst. A survey in 1991 revealed an omnipresent recognition among tobacco farmers that they would be, and have chosen to be the last agricultural generation at least in the history of their own families.

Such economic transformation cast tremendous impact upon Meinung's Hakka society and culture. First, because of the intensifying socio-economic transformation after the mid-1980s, the social fields in which Meinung younger generations were socialized also regressed to their own families and schools. While modern education in schools paves the way to urban living, their parents also look forward to their future out of Meinung and out of agriculture, hence decreasing the need felt to immerse their

next generations in Hakka culture. In the recent decade, the ability and willingness to use the Hakka dialect has been waning among younger generations in Meinung. Consequently, their confidence and identity in traditional Hakka building declined.

To be worse, in the early 1990s the Taiwanese government planned to build a 147-meter high dam at the Yellow Butterfly Valley in order to meet the highly expanding water demands of the petrochemical and steel plants of southern Taiwan. The Yellow Butterfly Valley, known to the Meinung people as Twin Creeks, has strong cultural connections and connotations to Meinung society since its first settlement in 1763. Originating in the valley, with Twin Creeks as its upstream, the Meinung River runs through the major settlements. In their cosmology, Meinung people view the Twin Creeks and valley as the origin of their cultural and economic being. Ancestors are buried there; compound houses were built with their axes pointing right toward the valley. People believe that good cosmology would bring about fortune. Every spring, several weeks before the monsoon season, to complete the whole cycle of cultural reproduction, elder generations lead their descendants to the valley where they clean and worship the ancestral tombs.

For the broader Taiwan society, the Yellow Butterfly Valley has long been famous as a natural habitat for yellow butterflies such as Catopsilia Crocale and Catopsilia Pomona. This valley is ecologically unique in that the butterflies spend their entire life cycle there, while other butterfly valleys keep butterflies only in the winter. Twice a year, in June and October, the butterfly ecology reaches its crescendo. At these crucial moments, some fifty million yellow butterflies dance around in euphony of color.

The dam site is to be exactly on the mouth of the valley that is, only 1,900 meters from the nearest village and about 4,000 meters to downtown. It is to be 147 meters in height and 800 meters in length. Once the dam was completed, the whole valley would be flooded. Good or bad, the dam project will surely influence Meinung's progress.

■ The Meinung Anti-dam Movement

In October 1992, peasants farming in the Twin Creeks area saw a surveying team exploring the geography and geology there. The rumor, which had been lingering in Meinung for about ten years, was thus verified that the government planned to build a dam in Meinung. The response in Meinung was mixed. The hometown youths that were unemployed or not fully employed welcomed the project out of the expectation that it might bring huge job opportunities. Many representatives of the Township Council felt humiliated because of the lack of democratic procedures; they as representatives of the Meinung people, were not informed or invited to participate in the decision-making. Elder gentry who lived through the Japanese occupation were

worried about the safety of the dam. As far back as they could remember, the Twin Creeks area had been explored by Japanese engineers for the possibility of building dam. But the Japanese soon gave up because the geology there was too soft for dam construction, a belief also shared by the peasants farming there.

Even local intellectuals of younger generation held ambivalent attitude to the dam project. On the one hand, they confronted with the economic opportunity that the dam could produce. In face of agricultural declines and increasing emigration from Meinung, it might be possible that dam construction could bring about another tide of prosperity to Meinung, and let more Meinung people stay at home. On the other hand, from their knowledge of KMT regime they could hardly imagine that it would take local welfare into account. If local people did not get organized and let their voices be heard, the economic opportunity would either bypass or be treated as mere booty divided among local influentials.

On October 1992, a group of local intellectuals got together and discussed five principal reasons against the dam project.

First, the dam will be a deadly psychological burden and will threaten the safety of Meinung. The dam is only 1,900 meters from the nearest village, and 4,000 meters to downtown. It is also believed that the dam site had been found by Japanese engineers to possess serious faults.

Second, the dam is not economical in two senses. On the one hand, soft shale and sandstone, both of which are detrimental to the dam's life span, mostly make up the geology of the Twin Creeks catchment area. On the other hand, of all the water to be provided by the dam, 80% is for steel and petrochemical plants only 20% for urban civilian uses. As widely recognized, these highly polluting industries have been major contributors to the environmental devastation and public health problems of southern Taiwan.

Third, the Twin Creeks area possesses ecological and cultural resources, which are precious to Taiwan. In the Japanese period, over one hundred species of tropical trees were transplanted here from the southern Pacific. Similar weather, abundant rainfall and high humidity have guaranteed their exotic growth and this experimental tropical forest (also referred to as the Tropical Mother Forest) has become the most diverse forest in Taiwan. The rainy weather and suitable flora (especially Indian rose chestnut trees) also contribute to the formation of the yellow butterfly ecology, which has been so famous that the Twin Creeks received another name, Yellow Butterfly Valley. The valley has become a natural classroom for nature education and ecology enthusiasts. Recently, under the creative management of various artists, the mother forest also became the only Forest Theater in Taiwan. Ecological environment and theatrical

culture are fused organically in the valley. The Twin Creeks area is also the homeland of Li-Ho Chung, one of the greatest Taiwanese writers of the first half of Twentieth Century, and his masterpieces are kept here.

Forth, the decision-making processes of the dam project, which will be highly influential in Meinung's future, is anti-democratic; no effort to invite the broader participation of the local people and local government has been made.

Finally, instead of building short-lived dams, the most reliable way to provide sustainable water is through environmental repair. The Kaoping River has to be depolluted and the ruined upstream mountains have to be reforested.

After several meetings, as more negative impacts were submitted and discussed, the idea of negotiating with the government for local benefits were put aside; the dam issue became a question of life or death. These intellectuals managed to persuade Township Mayor, who then informed the central bureaucrats of the necessity of holding a local public hearing for the dam project.

On December 10, 1992, the first public hearing on the Meinung Dam took place in an auditorium of a local elementary school. The dam's negative impacts on ecology, sustainable management of water resource, Hakka culture and, most importantly, local safety, were exposed and examined.

The hearing paved the way for successive organization and mobilization. An organization of local intellectuals, township representatives, and farmers took form afterwards. They referred to themselves as the Meinung People's Association (MPA). On April 1993 and May 1994, the MPA successfully mobilized local people and launched petition action against the dam project, leading to two consecutive suspensions of the dam project's budget.

■ Community Movements and Empowerment

Anti-dam movement was the origin of the foundation of MPA. Yet, the organization does not confine itself to this issue. MPA sees the dam project as part of Taiwan's history of industrialization and urbanization at the expense of rural areas. With the broader perspective of dam project, MPA strives to establish a strong network of environmental organizations around Taiwan in order pressure the government to face the serious environmental problems confronting.

In addition to environmental issues, MPA has made great efforts in mobilizing the rural people to demand their rights and welfare that have been neglected by the central government. Although the Martial Law was lifted ten years ago, democracy is no more than a formality. The government decides almost all projects whereas the local people are not included in any form of discussion. MPA maintains that the people should be actively involved in deciding the paths of their lives.

In order to achieve the aforementioned objectives, MPA has initiated a great deal

of activities. For example, many cultural activities have been held in the Yellow Butterfly Valley where the dam site is proposed. Via folk song concerts, people theater performance, and annual Yellow Butterfly Festivals, the local people as well as the visitors from other areas have experienced the wonder of peaceful interaction between human beings and the nature.

Hakka is one of the ethnic minorities in Taiwan, who have experienced the loss of cultural traditions and ethnic identity. MPA has made an effort to revive the Hakka cultures. They collected the old photos of the lives of the traditional Meinung people, displayed those pictures in several traditional compound houses and asked the elderly to tell their life stories. They spent two years in studying and writing the history and traditions of Meinung society and just published "Meinung Ethnography," which has been applauded by many scholars as the best local ethnography in Taiwan.

These cultural activities are not meant to be only nostalgic to the old Meinung. MPA's primary goal is to establish the Hakka culture that is rooted in the tradition and continue to grow. For example, an old elementary school was planning to destroy a building of Japanese style for safety reason, and build a new one to accommodate the needs of new students. Several traditionalists insisted that the old building should be conserved whereas the modernists insisted that it should be destroyed because it was dangerous. MPA managed to hold several meetings with two sides of the issue and finally decided to restore the old building and transform it to a museum, and build a new one to meet the modern needs. Moreover, the new building is designed to incorporate the primary elements of traditional Hakka and Meinung architecture, such as the compound house and tobacco house. This new building of the elementary school has been viewed by many scholars and the general public as the greatest example of incorporating the tradition and modernity on the basis of collective participation of the local community.

Although several local activists originally initiated the anti-dam movement in Meinung, MPA has become an organization of all sectors of the Meinung community as well as supporters from the cities. Out of more than 300 members, there are farmers, teachers, politicians, housewives, students and professors. MPA has been viewed as one of the best example of grass-rooted organization in Taiwan.

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Mother Earth Unlimited

Philippines

Mother Earth Unlimited was organized in 1998 by a group of environmental activists in the Philippines whose primary concern is to provide a meaningful and holistic response to the various environmental issues facing the nation. The vision of Mother Earth is to realize man's oneness with Infinite Life in a healed and renewed earth. One of its objectives is to raise the level of public awareness on environmental issues (such as air pollution, soil degradation, ozone depletion, ground water contamination, global warming, acid rain, forest destruction) and to move them to righteous action addressing these issues. Mother Earth conducts workshops and trainings on ecological waste management and advocate for intensive composting, total recycling to render waste incinerators and landfills unnecessary.

National Environmental Agency (Nea)

Vietnam

The National Environmental Agency (Nea) is a government department under the Ministry of Science, Technology and the Environment (MoSTE) of Vietnam. NEA is engaged in a three-track program to (i) update its 1991-2000 "Strategic Plan" for the period 2000-2010, (ii) develop an "Action Plan" pursuant to the new strategy and (iii) to revise its 1993 Environmental Law to reflect both. NEA's mandate includes studying and formulating policies, strategies, bills and legislative documents on environmental protection and sustainable development. It is responsible for taking environmental protection measures in order to maintain environmental health, including controlling pollutants and managing domestic, industrial, agricultural wastes. The Pollution Control, Waste Management and Environmental Incident Response Division of NEA is taking the lead in studying the appropriate technologies for the disposal of hospital waste, obsolete pesticides and POPs waste.

PROGRAM FOR SOUTHEAST ASIAN AREA STUDIES (PROSEA) ACADEMIA SINICA
Taiwan

I. Objectives

The Program for Southeast Asian Area Studies was organized in September 1994 to facilitate multidisciplinary research on Southeast Asia among researchers in the Academy. At present, the Program has identified the following four areas for research:

1. Southeast Asian History and Prehistory
2. Languages, Religions, Ethnic Groups and Indigenous Cultures in Southeast Asia
3. Post-Colonial Developments in Southeast Asia
4. Interaction of the Ethnic Chinese and Southeast Asian Peoples

II. Current Research Activities

For the year of 2001, there are 11 ongoing research projects being conducted by individual researchers of the Academy's humanities and social science institutes. These projects are further organized into the above four areas. PROSEA also supports researches conducted by Post-Doctoral fellows, Ph.D. and MA students in Taiwan to engage in Southeast Asian studies.

1. Southeast Asian History and Prehistory Projects

1) Archaeological Survey of the Northern Luzon Coast in the Philippines
   Dr. Cheng-Hwa Tsang
2) Ancient Sino-Thai Maritime Transportation History
   Mr. Chung-Yu Chen
3) Archaeological Investigation of the Coastal Area of Northern Vietnam
   Dr. Wei-Chung Chen
4) The Southeast Asian Shipwrecks around China in the Qing Dynasty
   Dr. Shi-Yeoung Tang
5) Sino-Vietnamese Relations during the French Colonization
   Dr. Wen-Tang Shiu
6) The Bloc Economy and New International Order in Southeast Asia: the Commercial Networks between Shanghai, Hong Kong and Singapore in the 1930s
   Dr. Yu-Ping Lee
7) Indonesia in Japan's Movement of "Administrative Integration within the Empire", 1944-1945: "Java Hokokai" as a Comparative Study
   Dr. Hui-Yu Ts'ai

2. Languages, Religions, Ethnic Groups and Indigenous Cultures in Southeast Asia Projects

1) Cultural Pluralism and Historical Formation Process of Malacca
   Dr. Lan-Shiang Huang

3. Post-Colonial Developments in Southeast Asia

Projects

1) Industrial Development and Trade Dependency among Japan, Taiwan, Korea ,and Southeast Asia
   Dr. Deng-Hsing Huang
2) The Economic and Trade Relationships in Agro-Food Sector between Taiwan and ASEAN under the New World Trade Order
   Dr. Ching-Cheng Chang

4. Interaction of the Ethnic Chinese and Southeast

Asian Peoples Project

1) Integration or Clash? A Preliminary Research on the Modern Development of the Chinese Muslims in Malaysia
   Dr. Hung-Yuan Chu

5. Post-Doctoral Research Projects

1) Islamization and Malay Societies in Southeast Asia
   Dr. Lau-Fong Mak
2) Buddhist Art of Sukhothai
   Dr. Chih-Hung Yen
3) Ethnic Identity and the State: Quemoyans in Singapore
   Dr. Chang-Hui Chi

6. Collaborative Research Projects

1) Market Goes Hand in Hand with State: Changing Industrial Relations of "Taishang" in Southeast Asia
   Dr. I-Chun Kung (Institute of Southeast Asian
   Studies, Tamkang University)
   Dr. Hong-Zen Wang (Division of Future Studies, Tamkang University)
   Dr. Han-Pi Chang（Department of Public Policy and Management, I Shou University）
2) The Development of the Nahdlatul Ulama in Indonesia
   Dr. Yu Chin（Institute of Religion and Culture, Tzu Chi University）

7. Doctoral Student Research

1) The Formation and Change of Asian Financial Centers
   Mr. Kun-Lu Wu
2) The Political Economy of Asian the Financial Crisis
   Mr. Chiou-Yuan Lu

8. MA Student Research

1) Inmigrants and the Development of Buddhism in Peninsula Malaysia during the British Colonial Era （1786-1957）
   Mr. Chew-Peng Tang
2) The Study on Malaysia's Foreign Investment Policy
   Mr. Choon-Siang So

3) State Autonomy and Capacity: Thailand's Financial Crisis in 1997
   Mr. An-Kuei Cheng
4) The Role of Non-Governmental Organizations in Thailand's Democratization
   Mr. Chiao-Po Chang
5) Ethnic Conflict in Burma: A Case Study for Karen
   Mr. Hung-Hsin Hsu
6) Formation and Development of Secessionism in Indonesia: A Comparative Study of West Papua and East Timor
   Mr. Jian-Rou Li
7) The Subject Formation of Malaysian Chinese Pop Singers in the 1990s
   Mr. Weng-Keat Lee

III. Organization

1. Administration

Director: ***Dr. H. H. Michael Hsiao***
Research Coordinators: ***Dr. Chih-Hung Yen***
Dr. Chang-Hui Chi
Administrative /Editorial Assistants:
Ms. Shu-Huei Lin
Ms. Zui-Xin Wen
Ms. Tze-Yin Guo
Librarian: ***Ms. Huei-Hsin Lo***
Ms. Ming-Xiu Chen
Network Specialist: ***Mr. Kai-Hean Leong***

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Dr. Chak-Yan Chang (Political Science)
Director, Research Program on Ethnicity and Overseas Chinese Business, Lingnan University, Hong Kong
Dr. H. H. Michael Hsiao (Sociology)
Research Fellow, Institute of Sociology, Academia Sinica

IV. Publications

1. ***Newsletter of Southeast Asian Area Studies***
   (three issues per year)
2. ***Research Bibliography Series***

- Southeast Asia Collection, Academia Sinica
  Edited by *H. H. Michael Hsiao* and
  Shu-Huei Lin, 1995
- A Bibliography for Archaeology and Related Studies of the South China Sea Area
  Edited by *Chung-Yu Chen* and
  Min-Li Chang, 1996
- Annotated Bibliography on International Labor Migration in Southeast Asia
  Edited by *Ching-Lung Tsay* and
  Wilawan Kanjanapan, 1997
- A Catalogue of Materials Related to Southeast Asia in the Taiwan Jiho
  Edited by *Wan-Yao Chou* and
  Tsung-Hsien Tsai, 1997
- Korean Collection, Academia Sinica
  Edited by *H. H. Michael Hsiao* and
  Ming-Xiu Chen, 1998
- Japanese Collection, Academia Sinica
  Edited by *H. H. Michael Hsiao* and
  Ming-Xiu Chen, 1999
- Collection of Ph.D. and MA Theses on Southeast Asia, Japan and Korea, Academia Sinica
  Edited by *H. H. Michael Hsiao* and
  Ming-Xiu Chen, 1999
- Contemporary China Collection, Academia Sinica
  Edited by *H. H. Michael Hsiao* and
  Ming-Xiu Chen, 2000
- Material on the Sino-Vietnamese Relations in the *Dai Nam Thuc Luc* (*Veritable Record of Vietnam)*
  Edited by *Wen-Tang Shiu* and
  Chi-Yi Hsieh, 2000

3. Book Series

- Changes in Southeast Asia
  Edited by *H. H. Michael Hsiao*, 2000

4. PROSEA Research Paper Series

No.1 Rueyling Tzeng: Foreign Direct Investment in Southeast Asia Since the 1980s: Implications of Regional Economic Integration

No.2 Chin-Fen Chang: Exports, Growth and Dependancy: A Preliminary Study of ASEAN-5

No.3 H. H. Michael Hsiao: Asia – Pacific Trans- formation, Regional Growth Triangle and Sustainable Development (in Chinese)

No.4 Chin-Ming Lin: Southeast Asian Countries' Service Industries in Globalization of the World Trade

No.5 I-Chun Kung & Chin-Shu Chang: The Emerging Middle Classes of Southeast Asia: Middle Classes Formation in Malaysia, Indonesia, Thailand and the Philippines (in

Chinese)

No.6 I-Chun Kung: A Preliminary Study of Ethnic Chinese Transnational Business Network in Southeast Asia (in Chinese)

No.7 Man-Houng Lin: Expanding Taiwan's Trade Network to Southeast Asia: The Interaction among Indonesian Overseas Chinese Merchants, Taiwanese Merchants, and Japanese Government, 1895-1919(in Chinese)

No.8 Lau-Fong Mak: Between Materialism and Post-Materialism: The Addicted Middle Class of Singapore

No.9 Kenneth Christie: Liberal vs. Illiberal Democratization: The Case of Southeast Asia

No.10 Tsu-Yu Chen: A Preliminary Study on the Economic Relations Between Taiwan and Southeast Asia Under Japan's Southward Advance Policy (in Chinese)

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No.15 Jaran Maluleem: The Coming of Islam to Thailand

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5. ISEAR Research Paper Series

No.1 H. H. Michael Hsiao & Alvin Y. So: The Making of the East Asian Middle Classes: The Five Propositions

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People's Association On Counter Measures Against Dioxin And Endocrine Disruptors

Japan

The People's Association On Counter Measures Against Dioxin And Endocrine Disruptors organizes activities aimed at promoting policies and actions that will prevent dioxin contamination of the human body and the environment. It is the foremost policy advocacy NGO in Japan on dioxin and other toxic chemical substances.

Recycling Association Of Guam

Guam

The Recycling Association Of Guam is a non-profit, community education organization formed in 1988. Membership is open to all residents of **Guam**. The objective is to promote awareness of alternatives for managing household and business waste. RAG works to educate residents through public speaking to community groups, clubs and schools. RAG's library is also available and has magazines, newspaper articles, video and audiotapes etc. RAG's newsletter publishes recycling tips and choices.

Society For Conservation And Protection Of Environment

Pakistan

The Society For Conservation And Protection Of Environment or SCOPE is a non-profit, non-governmental organization in Pakistan that was established in 1988. Its mission is to protect the environment at local, national and global level by promoting the implementation of the global environment Agenda for the 21st century, in their true spirit and words, through networking, advocacy, capacity building, research, community organization and legal actions to achieve self-sustainability. SCOPE will achieve its mission through non-political, non-religious, non-racial, non-ethnic, democratic, transparent and commitment-driven approach. It is on the consultative status of United Nations Economic and Social Council (ECOSOC) and is accredited to a number of United Nations Conventions and Commissions like the Convention to Combat Desertification, Convention on Biological Diversity, Federation of Climatic Change Convention and the Convention on Science and Development. It is the former regional focal point and currently the National Focal Point of RIOD (French acronym for International NGOs Network on Desertification), and is also a member of Environmental Liaison Center International (ELCI) and Environmental Law Alliance Worldwide (E-LAW). SCOPE is one of the pioneering NGOs that uses legal advocacy and activism as an effective tool for "environmental defense" in Pakistan.

Society For Direct Initiative For Social And Health Action (DISHA)

India

Since 1995 the Society For Direct Initiative For Social And Health Action (DISHA) is active on different issues concerning environment, social health and human rights in the state of West Bengal in India. DISHA conducted a clinic for two years (1995-97) to cater health facilities to the waste pickers (ragpickers) at the main dumpsite of Kolkata. Apart from providing health facilities, DISHA carried out studies on socio-economic condition of the ragpickers and took effort to organize the waste pickers to form their cooperative. It also conducted studies on environmental pollution (water quality and air quality) at the dumpsite area. DISHA launched protest campaign in 1997 against the decision of the Government of West Bengal in line with a World Bank project for installation of incinerators at every hospital and medical center in West Bengal having more than 300 beds. Since 1998 onwards DISHA has been organizing public campaign and delivering watchdog function for safe management of medical waste. DISHA is campaigning for a zero waste society. It promotes reduction, reuse and recycle in our daily life. DISHA is poised to design a safe waste disposal system for a community producing 500 tons of waste per day. DISHA is developing network among groups active on environmental issues in east and northeast India.

Stop Dioxin Pollution Kanto-District Network

Japan

Stop Dioxin Pollution Kanto-District Network was established to end dioxin pollution by abolishing waste incineration and strengthening the regulation for gas emission from waste incinerators in Japan. This non-governmental Network has persistently demanded that waste authorities implement full-scale countermeasures to prevent dioxin pollution in the country.

Taiwan Watch Institute

Taiwan

In 1998, a group of people from all over Taiwan got together in Taipei to organize an association, Taiwan Watch Institute, to engage in watching the environmental and ecological issues, monitoring public policies as well, and unite with the general public of Taiwan to pay attention and to care for its environment and ecology toward sustainable Taiwan.

Taiwan Watch Institute has not planning a great expectation, and nor has planning a great accomplishment. All we want to perform as an organization is to record our performance and all sorts of happenings in our living environment. In which, we may have a chance to observe how the environment reacting to our efforts. Also, we shall have a chance to figure out how to let our generation and future generations to live on this precious land with dignity and happiness. Professor Chang Kow-Lung had stated very clearly " We believed that every member of the residents on this global village will not allow the land we live on to suffer serious destruction, and nor willingly to see the human beings to be an endangered species. We shall stop the continuous destruction of our mother land, and we shall let our offspring to co-exist with the land, and to live harmoniously with the Nature. We shall not rely on the activity conducted by the government only, and shall not depend on the little efforts contributed by the people advocating environment protection. We shall call upon the citizen of the global village to become an activist and contributor to participate in the environment protection."

Starting from the end of 1998, we publish "*TaiwanWatch Quarterly*" periodically. The *Taiwanwatch* records the search and discussion of the observed change and the variation in the environment of Taiwan and the globe, also the impacts on the health of ecology and human beings. Up to July of 2001, eleven issues of the *Taiwanwatch* have been published, and the features were included Oceanic Centry, Land Planning, Green Transportation, Forest Culture, Urban Development, The Furious Land, Resource of Land and Water, Energy Revolution, Ecological Advocates, Globalization, Waste Management, and Clean Production accordingly. In June of 2000, we published *State of Taiwan 2000* on comments of the environmental policy and practice having a strong influence and impact on Taiwan in the previous year. There were openly debating the Usage in Land Resource, Energy Resource, Industrial Development, Environmental Planning, Waste Management, and the Social Status of Environmental Taiwan in *State of Taiwan 2000*. With this publication, we are expecting by going through the debate and suggestion to benefit both in society and

public administration toward sustainable Taiwan.

In order to provide more sufficient environmental information to our country folks, we have translated Worldwatch papers in Chinese and published them from the internationally known organization, the Worldwatch Institute. From 1998, we have translated and published the following 13 papers including *Imperiled Water Impoverished Future: The Decline of Freshwater Ecosystems; Infecting Ourselves: How Environmental and Social Disruptions Trigger Disease; Climate of Hope: New Strategies for Stabilizing the World's Atmosphere; Shrinking Fields: Cropland Loss in a World of Eight Billion; Dividing the Water: Food Security, Ecosystem Health, and the New Politics of Scarcity; Paying the Piper: Subsidies, Politics, and the Environment; Guardians of the Land: Indigenous Peoples and the Health of the Earth; Taking a Stand: Cultivating a New Relationship with the World's Forests; Losing Strands in the Web of Life: Vertebrate Declines and the Conservation of Biological Diversity; Rocking the Boat: Conserving Fisheries and Protecting Jobs; Back on Track: The Global Rail Revival; Abandoned Seas: Decline of the Oceans;* and *Net Loss: Fish, Jobs, and the Marine Environment.*

This year, we have translated and published *State of the World 2001* in Chinese. This book is the flagship publications of Worldwatch Institute. Starting from 1984, the Institute's distinguished research team brings an interdisciplinary perspective to data from around the world, providing information on how to build a sustainable society for more than two decades. *State of the World 2001* is written in clear and concise language by the staff an easy to understand language and published in some 30 languages. *State of the World* has been sold more than one million copies to become an important reference in many fields from industry, government, academic, and research institute, and has a huge and significant influence to policy-making and concept-transformation. The Chinese edition has been completed at the end of June this year, after the efforts contributed by many people. Currently, we are engaged in translation of another publication of the Worldwatch Institute, *Vital Signs 2001*, which is the 10th anniversary edition supported by United Nations Environment Programme (UNEP), illustrating how an economy geared only towards meeting insatiable consumer demand can adversely affect human, environmental, and economic health. A greater reliance on cars not only heats up the planet but also leads to more sedentary lifestyles--- a major cause of obesity. The development of lucrative drugs to treat diseases of the First World is keeping money away from critical research on vaccines and medications aimed at diseases like malaria that afflict far larger portions of the world population. Industrial farming practices have created one of the most gruesome crossovers of disease from animals to humans, Bovine or 'Mad Cow' disease. The challenge of this new century is to extend the economic progress of the

last 50 years, while halting the ecological decline. We hope that the statistical snapshot contained in *Vital Signs 2001* will help us, Taiwanese, to realize the facts of problems we have countered and find the counter measures for them. Chinese edition of *Vital Signs 2001* is to be published before the end of coming September.

To counter the deteriorating of environment and degrading of ecology in Taiwan, and to make the general public to aware the environmental contamination and the environmental protection, we have hold the community meetings, lectures, workshops and symposium on waste management and sustainability. We have emphasized on issues of incinerators. In July of 1999, we cooperated with Essential Information Center of USA inviting Dr. Paul Connett, an advocator of anti-incinerator and a chemical professor of St. Lawrence University of New York to visit our country. During Dr. Connett visiting, we arranged 13 lectures and community meetings at Taipei, Kaohsiung, Tainan, Taichung, Hsingchu, and Taoyuen on the problems and pollution of incinerators. We strongly oppose to construct all sizes of incinerators elsewhere unlimitedly by the government. Meantime, we make efforts to promote alternatives of waste management, train the public and communities to transform consumption behavior, reducing, recycling, composting in order to reach the zero waste and sustainable society. Although it is hard to promote zero waste with the short- sighted government officials ignoring the public demand, as a citizen of Taiwan, we do not have time to be pessimistic. What we shall do is keeping to do the right toward sustainable Taiwan and the Earth!

Your Concern, Support, and Action shall be our goal!

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Thanal Conservation Action And Information Network

India

The Thanal Conservation Action And Information Network is a public interest research group based in Keralam, India. Thanal was started as a group to undertake studies in natural history and also to take up nature education program for students. The main focus is on study and building of database on natural heritage. Thanal is supporting organizations and local communities by providing technical information, research inputs, policy analysis and networking. It also organizes educational interactions, skill shares and public education programs. Thanal also focuses on studies, campaigns and education programs related to toxics around us. Issues related to industrial pollution, pesticide contamination, wrong and inappropriate technologies are also a new but major area of work for Thanal. Thanal is a member of Health Care Without Harm (HCWH), International POPs Elimination Network (IPEN), Waste Not Asia and the Global Alliance for Incinerator Alternatives (GAIA). Thanal has been associating with Greenpeace India to bring out a Newsletter "Toxic Alert-Keralam" published by Greenpeace, as a campaign material on Remembering Bhopal. Thanal functions on an informal basis, and is a group of individuals forming a collective platform to work together. The work and programs are designed and guided by the Core Group. Its mission is "Quest for Survival" and "Gather for All Beings."

The Environment And Public Health Organizations

Nepel

Established in 1990, Enpho, The Environment And Public Health Organizations is a public interest NGO in Nepal. ENPHO has completed fifty reports on environmental issues in Nepal, focusing on water quality analysis, sanitation, air quality, waste management, and health education. ENPHO is currently involved in the establishment of a medical waste management system in the capital in association with the Kathmandu Metropolitan Corporation and the European Union. The ENPHO research team has completed the feasibility study for the said project and is presently conducting an environmental impact assessment for the proposed medical waste treatment facility.

The Greenpeace China

China

Greenpeace was formed in 1971. For these 30 years, Greenpeace is working for a phase-out of greenhouse gases, primarily through changes in the energy and transport sectors, by improving efficiency and opting for renewable energy sources such as solar, wind and biomass. We have also campaigned to end the production of all ozone-depleting chemicals and to offer alternatives to existing ozone-depleting refrigeration. In the early 1990s, Greenpeace initiated the development of an ozone-friendly refrigerator. International manufacturers in many countries including China have adopted this GreenFreeze technology.

Greenpeace China was set up in February 1997. It is now a fully operational national office that monitors environmental issues in China, Hong Kong, Macau and Taiwan. Greenpeace China, which operates in line with Greenpeace International worldwide principles, allies itself with no political party and takes no political stance except for the protection of the environment. Greenpeace is funded almost entirely by the contributions of its approximately 3 million supporters from 160 countries. It is independent of the influence of governments, groups and individuals and maintains a strict policy of soliciting no government or corporate funding. Greenpeace embraces the principle of non-violence, rejecting attacks on persons and property.

(Editor's note: Taiwan is not included in China's sovereign. Taiwan is a sovereign state.)

Walhi

Indonesia

Walhi is the Indonesia Forum For Environment. The Forum, formed in 1980, has 420 member NGOs from 24 provinces all over Indonesia. WALHI works to improve and strengthen the capacity of the civil society in Indonesia to take control of the development process and environmental management. WALHI believes that people's control is essential to achieving sustainable development in the country.To implement its vision, WALHI focuses on five strategic goals: to improve organizational effectiveness, to consolidate people's organizations, to develop human resources, to network for environmental advocacy, and to influence law and policy to protect the environment. WALHI's advocacy program deals on green issues (natural resources managements) and brown issues (urban environment, energy and industry pollution).

Toxics Link

India

Toxics Link was formally set up in March 1996 by a group of like-minded NGOs, voluntary organizations and individuals concerned about toxic pollution in India. Its goal is to strengthen campaigns against toxics pollution, help push industries towards cleaner production and link groups working on toxics issues into a national toxics movement in the country. It serves as information clearing house on toxics and related issued in India, with three information outreach nodes in Delhi, Mumbai and Chennai. Toxics Link describes itself as a "group of people working together for environmental justice and freedom from toxics. We have taken it upon ourselves to collect and share both information about the sources and dangers of poisons in our environment and bodies, and information about clean and sustainable alternatives for India and the rest of the world."

Appendix

The Basel Treaty's Ban on Hazardous Waste Exports: An Unfinished Success Story

Published in International Environmental Reporter
23 INER 984, 6 December 2000
By Jim Puckett

Introduction

It is rare in the course of history when an environmental crisis is prevented in time to avert global-scale disaster. It is rare when our collective response is one of great relief rather than an extended era of damage control. Such an outcome, however, has been realized with respect to the international community's timely decision to ban the export of hazardous wastes from developed to developing countries. Today, due to this global effort of just a few short years, an ad hoc ban now exists while a legally binding ban awaits the necessary ratifications to enter into the force of law.

Despite this stunning success at preventing a crisis, a small minority of countries and special industrial interests that would profit from the economic dumping of toxic wastes from rich to poor economies have claimed that the Basel ban was never really warranted, that it does not reflect the realities of today's world, and that the dam it has erected against the North-to-South, West-to-East waste flood should perhaps be cracked open again.

This article will trace the short history of the Basel ban as achieved under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and assert that it can already be hailed as a major success (INER Reference File 1, 21:3701). It will show how the ban's success has allowed a small but vocal group of critics the luxury of finding relatively small faults while ignoring the overarching horrors it has avoided. The grave danger now is that because the economic dynamics that created the waste trade scandals of the late 1980s have actually increased, if ban detractors succeed in punching loopholes into what can only succeed as a strict prohibition, it is highly likely that we will finally realize the full-length nightmare from which we had the wisdom to awake upright in the early 1990s.

Why a Ban?

The treaty that became the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was first proposed in 1987 as a rapid global response to a late 1980s outbreak of international waste dumping that had stung the world and threatened to become epidemic. For the first time, the combined effects of vastly increasing quantities of hazardous wastes in developed countries, and a clarion call in those societies to better control and manage such wastes, created an unintended and unexpected powerful economic incentive for waste generators to export their waste problems rather than solve them at home. The profits to be made by this most blatant form of cost externalization were so persuasive that even civic municipalities such as the "City of Brotherly Love"–Philadelphia—ignored onerous moral questions and, buffering themselves with brokers and unscrupulous traders, simply paid lowest bidders to make their noxious wastes go "away."

It had become clear, as was stated so baldly in 1991 in an infamous leaked World Bank memo by now Secretary of the U.S. Treasury Department Lawrence Summers, that indeed "the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable,"—that is, if matters were left to the free market.

And yet the vast majority of the Earth's citizens, Mr. Summers notwithstanding, found such free trade in "bads" rather than "goods" unacceptable. A cry arose from the global community to create an international instrument to erect certain trade barriers and correct these market abuses on behalf of the environment, particularly in developing countries.

Since the Basel Convention's inception, the goal in the minds of the developing countries was to instate a full, no-exceptions ban on all exports of hazardous wastes from developed to developing countries. However, due to the consensus decisionmaking process required in the initial formation of international law, the lowest common denominator of negotiating countries prevailed.

The resulting convention, which upon adoption in 1989 only required an exchange of paperwork prior to wastes being traded, was condemned by environmental organizations and developing countries alike for doing little more than legitimizing what they believed should have been deemed a criminal activity. Indeed, Gianfranco Ambrosini, who masterminded a shipment of waste from Italy to Djibouti and tried to export tons of waste to Guinea Bissau and Senegal, claimed on Swiss television on the eve of adoption that obtaining a few signatures on a piece of paper was the least of the normal challenges he faced when putting together an international toxic waste trade deal.

But the failure of the Basel Convention was met with further resolve among developing countries. Because the Basel Convention did not ban waste trade, the African group walked out without signing the convention and vowed to create its own convention to protect Africa. By the time the Basel Convention entered into force in 1992 and held its first Conference of the Parties, not only had Africa adopted its waste-trade-banning Bamako Convention (21:4201), but the African, Caribbean, and Pacific countries had joined force with the European Union in 1989 and agreed to a full waste trade ban in the Lome´ IV Convention. A similar agreement was soon to be signed in Central America (1992), and additional efforts were launched in the Pacific Island region and in the Mediterranean, which have since created legal ban agreements.

The momentum for a global ban that placed the onus on the exporting countries rather than on potential importers continued to escalate. Finally in 1994, at the second Conference of Parties to the Basel Convention, over the objections of the United States, Canada, and Australia, the G-77 group representing developing nations was able to join with the European Union in adopting by consensus a full, no-exceptions ban on the export of hazardous wastes from countries of the Organization for Economic Cooperation and Development (OECD) to non-OECD countries. In 1995 the ban was transcribed into a decision to amend the convention accordingly. The amendment today has so far been ratified by 22 of the necessary 62 parties needed to enter into force.

The Basel Ban: Already a Stunning Success

Meanwhile, however, the instances of actual and proposed OECD to non-OECD hazardous waste trade have diminished dramatically across the globe. While Greenpeace, which monitored all such waste trade schemes, was able to publish phone-book-sized "inventories" of waste trade schemes in the early 1990s, the descriptions of such waste trade since 1994 are barely enough to fill three pages.

Thus it can be said with accuracy that an ad hoc, morally binding ban is in place. Ironically this success has been taken for granted and has made it far too easy for ban detractors to claim that it has had little impact. The ban has in a way been victimized by its own rapid success, which prevented the world from ever having to truly bear witness to the full ugly potential of an unbridled hazardous waste trade.

However, were it not for the collective move to erect the global ban against the most blatantly abusive forms of the international trade in wastes, the already sad environmental and occupational

conditions in much of the developing world would have been made all the more tragic.

Imagine if certain developing countries in Africa, Asia, or Latin America had yielded to the Hobson's choice of "poverty or poison" and chose the latter. Imagine that they willingly designated large tracts of their territories as sacrificial zones for large-scale dumping of the toxic effluent of the affluent countries. Imagine also that the known abuses of present-day Third World sweatshops were compounded critically by a new industry—involving the inherently dangerous tasks of hand sorting and recycling of hazardous waste materials such as polychlorinated biphenyl (PCB)-contaminated electronic scraps, organic solvents, lead-acid batteries, or asbestos-impregnated materials. And yet realize that these would be countries without the necessary economic resources to begin to mitigate or prevent wide-scale contamination and loss of life and health of workers.

Such a scenario would have ensured that certain regions of the world would become massive superfund sites with no superfund available to ever clean them up. Without the ad hoc global ban in place, we would now have witnessed a continually escalating waste colonization process that would not only have further degraded the health of seriously stressed peoples and environments but would have seriously degraded all moral authority for those who find virtue in economic globalization. Finally and perhaps ultimately most important, by eliminating all incentive, we would have forever undermined all efforts by industrialized powers to minimize their hazardous waste and product generation.

The One that Got Away: The Grim Reminder of Shipbreaking

Those that might doubt this gloomy analysis need only look at what happened in the global shipbreaking industry, which in the short span of just 20 years, simply by the dictates of the free market, shifted virtually all operations from northern shipyards to South Asian beach junkyards. There the end-of-life ships, PCBs, paints, and asbestos are hand harvested around the clock for their steel, with costs to life, limb, and lungs never entering the balance books of the profiteers. In one such operation in Alang, India, alone, 40,000 persons toil daily under the most hazardous occupational conditions outside of warfare. While there are countless ways that such workers succumb in these waste warrens, it is estimated by occupational health experts that one in four of these workers will contract cancer from just the asbestos found on board these imported waste vessels.

It is essential to remember that it was only due to the unique nature of ships-as-waste that the global community overlooked shipbreaking in the quest to ban hazardous waste exports. The Basel Convention and its ban amendment are ineffectual at completely regulating end-of-life ships as hazardous waste exports. Now that this waste flow has taken global root, it is a global cancer far more difficult to cure than it would have been to prevent. Hopefully, this grievous oversight will serve as a grim reminder of what would have passed for all hazardous waste streams had there not been a decisive preventative global response.

Today's Waste Trade Pressures: Greater Than Ever

While it may be impossible to prove what might have been, it is not difficult to assert affirmatively that the forces that created the international trade in hazardous wastes in the last decade are more acute today than ever before. That is, the relative factors that define disposal cost differentials, which in turn create the "impeccable logic" of free-market waste trade flows, have actually increased the pressures to export. These factors are:

- rigid control over such wastes in OECD countries, leading to high disposal costs there;
- increasing volumes of hazardous wastes, primarily in OECD countries; and
- global disparities in relative wealth that both lower relative wages and relative ability to

maintain rigid control over hazardous wastes, which in turn lead to lower disposal costs.

While the first factor has increased slightly in the last 10 years with generally stricter standards for incineration and landfilling in OECD countries, the second factor has in fact increased dramatically. OECD data show that in the last 30 years we have made little progress in reducing our mountains of wastes. Indeed there has been a steady increase even exceeding that of economic growth. In Europe, for example, according to the European Topic Center on Waste, from 1990 to 1995, there was a 10 percent increase—in just five years!

Meanwhile, the effects of globalization to date have seen the global gulf between the haves and have nots widening. In Prague, Czech Republic, this year at its annual meeting, World Bank President James Wolfensohn even felt compelled to exhort, "these inequities can't exist" in regard to recent trends that now find that 20 percent of the world controls 80 percent of the economy—with the rich getting richer as the poor are getting left further and further behind.

Clearly, the powerful vectors that create the tremendous gradient upon which hazardous waste toboggans across frontiers on its path of least resistance are actually increasing in dimension. Despite the claims of Basel ban opponents and free-trade zealots, it is certain that the "realities" that have stirred the global community in the last decade to act in concerted response to create a ban are more "real" than ever today.

"Nitpicking" the Ban

In this quiet, relatively scandal-free period, however, opponents of the ban have come out of their collective closets to take issue with it. They have based much of their critique on what is purported to be a "slow" rate of ban amendment ratifications as an indication that its global support has wavered—particularly among developing countries.

However, this premise has little basis other than perhaps some wishful thinking. The truth is that ratifications have proceeded at a steady, unfaltering rate and one that is comparable or faster than most other amendments to global treaties. Once the uncertainty over the debate on definitions of hazardous wastes was resolved in 1997, we witnessed seven ratifications that year, four in 1998, five in 1999, and five again in 2000. While this rate is too slow for many of us, virtually all subsidiary instruments (amendments and protocols) of existing treaties that require full ratification normally move at a slower pace than the acceptance of the treaty itself. To cite but one example, the 1996 protocol of the London Convention (on ocean dumping) has only four of 26 acceptances needed (21:1951).

Basel ban opponents also allege flaws and exceptions to the principles behind the ban. It is easy to find exceptions and flaws in any rule or legislation. But their arguments, even when valid, seem as small quibbling to those who understand the larger issues involved—they are drowned out by the furious economic pressures of the waste flood still boiling behind the dam. The admitted small losses must be observed in proportion to what the world has gained overall. Attempts now to accommodate small exceptions will almost certainly lead to an unenforceable, loophole-ridden instrument, one that is easily corrupted and manipulated by those well aware of the immense profits to be made.

For example, Basel ban opponents have noted that developing countries might in fact sometimes want hazardous wastes as a cheap source of metals that can be obtained through recycling rather than through continued extraction of primary sourced metals. While this case can sometimes be made in the short term, the argument usually looks far better on paper than in reality. In almost every case where this claim is made, a true costing of the long-term impacts of pollution and health impacts in the recipient country reveals the scheme to be a poor bargain for the country importing

the hazardous waste.

Another common complaint is that the OECD/non-OECD divide upon which the ban is based is an artificial one. While such a divide will always be an imperfect one, once again the disadvantages of this divider pale before the advantages. Most notably, placing the onus of the ban on the OECD is seen as absolutely appropriate. The OECD produces an estimated 90 percent of the world's waste and at the same time possesses the greatest resources to take real responsibility for it. That is, rather than exporting their problems, the OECD members should surely be among the first tier of countries in the world to fulfill the obligations of the Basel Convention to become self-sufficient in the management of their own hazardous wastes by minimizing them at source (Article 4.2 (a, b)).

Conclusion

The above reminders of what has been, what might have been, and what are today's global realities clearly paint for us the big picture of why the Basel ban remains a vital environmental victory. Yet while the Basel ban must be celebrated, we must also remind ourselves that it remains as yet an unfinished success story—a fragile victory. While it remains in moral force, it has not yet received the necessary ratifications to become a bulwark of international law. Currently, many special interests that can profit enormously by exploiting poorer economies with unsustainable hazardous waste trade still seek to undermine its implementation. Meanwhile, today's economic conditions make the threat of a renewed transboundary waste flood more serious than ever before.

In this quiet period, relatively free of the international waste scandals previously witnessed, it is vital that the global community appreciates what has been gained by the rapid deployment of the Basel ban and realizes what could be lost if we allow it to be discredited and dismantled. Only vigilance and a determination to see it ratified and cemented in place will finally deter its opponents and force them to take a responsible path toward waste management through waste minimization at source. As much as we all have an urgent duty to create new innovative ways to protect our children's future, it is even more vital that we protect and uphold the difficult gains we have made.

END

Key Provisions of the Basel Convention and the Basel Ban Amendment*

1.Obligation to Minimize Waste Trade and National Self –Sufficiency Principle.

- All countries should become self-sufficient in waste management to the extent possible. Waste in general should not be exported, particularly when the country of export has adequate facilities to manage it. This obligation is designed to ensure that wastes are not unnecessarily subject to dangerous transport, but even more importantly, to ensure that waste exports are not used to avoid minimizing the generation of hazardous waste at source through economically motivated export. (Article 4, para 2 (b) and (d)

2.Obligation to Ensure that Hazardous Waste Generation is Reduced to a Minimum.

To our knowledge this is the first place that we find it recognized explicitly in international law that the solution to the hazardous waste crisis is in minimizing its generation, not in merely managing it after it has been produced. This is fundamental in understanding why the Parties seek to minimise waste trade and in particular enacted the Basel Ban, as it is well known that waste trade, and in particular economically motivated waste trade, is a powerful disincentive to waste minimization. (Article 4, para 2 (a))

3.Establishes the Right to Ban Imports of Hazardous or Other Wastes and Requires that all Parties Respect these Bans by Banning Export to These Countries.

Contrary to the edicts of the World Trade Organization, the Basel Convention asserts the sovereign right of countries to ban imports of hazardous wastes and have such bans respected by exporters. (Article 4, para 1(a) and (b); Article 4, para 2 (e))

4.Obligation to Prevent Waste Trade if such trade does not constitute Environmentally Sound Management.

Environmentally Sound Management, including aspects of management encompassing waste prevention and minimization, must be adhered to with respect to import and export proposals, if such ESM is not guaranteed then the waste trade must not be allowed. (Article 4, para 2 (d), (e) and (g); Article 4 para 8)

5. Bans the Export of Hazardous Wastes from Rich to Poorer Countries Listed on Annex VII (EU, OECD and Liechtenstein to Other Countries.

This Basel Ban as it has come to be known, will, when in force, finally implement the primary and original intent of the majority of countries when they negotiated the Basel Convention. The Basel Ban is indeed the most significant legal requirement of the Convention as it is unequivocal, without exceptions and will actually alter national behavior rather than present ideals. The Ban is a realworld implementation of the above Basel principles. It is seen as calling for self-sufficiency first among those countries (OECD) that not only create the most waste globally, but have the most resources to manage their wastes at home and thereby minimize their generation as called for by the Convention. The Basel Ban has been hailed as a victory for both human rights and the environment and as the most important development to date for international environmental justice.

(*Not yet in force. Adopted in Decision III/1)

6. Prohibits trade in wastes between Parties and non-Parties absent a special bilateral or multilateral agreement.

While there is an exception made which unfortunately allows bilateral agreements, in circumvention of the rule, Parties are not normally allowed to trade with non-Parties. This helps to ensure that all countries play by the same rules and no one country becomes a global dumping ground for the rest of the world. (Article 5, para 5; Article 11)

7. Prior Informed Consent

is required for all trade not otherwise banned, so that all importing countries have knowledge of impending shipments and indeed consent to them prior to export. (Article 4, para 1 (c); Article 4, para 2 (f))

8. Makes no Distinction Between Recycling and Final Disposal.

Wisely,Basel recognises that where hazardous waste is concerned, recycling can be as problematic as final disposal and must be dealt with equally. (Article 2, para 4)

9. Criminalizes Illegal Traffic of Hazardous Waste.

Parties must apply criminal and not merely civil law to violators. This means that violators can see jail sentences rather than simply pay damages or fines. (Article 4, para 3)

10. Bans the Export of Hazardous Waste to Antarctica: The Convention

effectively ensures that Antarctica will not become a global dumping ground for hazardous or other wastes. (Article 4, para 6)

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Key Provisions of the Stockholm Convention

1. Precautionary Principle
as stated in the preamble "underlies all concerns," and is "embedded" in the Convention. It is placed in the very first operative words of the Convention – its Objective -- "Mindful of the Precautionary approach....", it is also placed in the operational section of the Convention regarding the consideration of future, as yet unlisted POPs for inclusion within the Convention. (Preamble para. 8; Article 1; Article 8, para 7 (a))

2. Eliminates Intentionally Produced POPs by Ending their Production and Use.
In an unprecedented and revolutionary move, the international ommunity actually has agreed to cease producing toxic compounds rather than just controlling them. With some temporary exceptions such as for operational PCBs, and DDT (for disease control) and some registered individual country exemptions (up to 10 years), the intentionally produced POPs must be eliminated from manufacture. (Article 3, paras 1)

3 No New POPs!
The treaty requires that Parties shall prevent the production and use of new pesticides and industrial chemicals which exhibit the characteristics of POPs. This is a powerful obligation particularly as this is tied to the Precautionary Principle and will restrain the attempted registration and manufacture of new POPs by the chemical industry. (Article 3, para 3;)

4. Includes Dioxins and Furans as Unintentionally Produced POPs the release of which must be continually minimized and eliminated where feasible.
This is probably the most significant aspect of the treaty in that it indicts a whole class of halogenated chemical products far beyond the 12 POPs and many technologies (including waste incineration) that produce dioxins/furans in their operation or life cycle. Countries are obliged to develop action plans to reduce or eliminate these dioxins/furans. (Article 5)

5. Substitution Principle

is to be applied for the minimization and elimination of dioxins/furans. If there was any doubt about how to eliminate dioxins and furans and whether they apply to all production of them and not just to "releases," the Convention asks parties to "use substitute or modified materials, products and processes to prevent the formation, and release of" POPs. This will provide a major boost hopefully to alternative products and technologies that don't produce dioxins and furans. (Article 5, subpara (c)).

Company Information: Where on the Web?

The Internet provides a lot of business information sources. Quite a bit is free, but more sophisticated and detailed information will come with fees attached. The amount of information varies with the size of the company. Big companies produce large amounts of available information, especially publically traded companies. Smaller companies are not as likely to be mentioned in news stories and they may never have been fined or sued.

Company Web Sites

Company web sites contain basic information B names of officers, headquarter address B and may include some useful information such as annual reports, press releases about new projects, resumes of company officers, and a description of the company=s business and services. To find a company web site try inserting the company=s name or initials in the web address format. For example, for Foster Wheeler, type: www.fosterwheeler.com. If no luck, plug in the company name in search engines.

U.S. Government Sites

SEC Records

Under U.S. law, companies whose stock is traded (referred to as Apublic@companies) are required to disclose certain information about their operations to shareholders and the U.S. Securities & Exchange Commission (SEC).

The company web site will give you what the company wants you to find out about them. Companies have to be more forthcoming in the disclosure statements that they must file with the SEC. You can find out a great deal of information, including company history, facility locations, names of officers, serious lawsuits pending against the company and financial statements. Even if you are not sure if the company is private or public, do a search to see if the company has filed records with the SEC.

The SEC has its own free web site www.sec.gov/edgarhp.htm from which anyone can download the most recent document a company has filed. More user-friendly web sites that offer free downloads of SEC company filings are: Free Edgar www.freeedgar.com , The 10k Wizard www.tenkwizard.com and Edgar Online www.edgar-online.com

Which SEC Report to Look At:

10K: The 10K report is filed each year and is the key SEC document to look at. It is a more detailed version of the company=s annual report. It contains a wealth of information including a Legal Proceedings section, which describes current litigation involving the company and mentions any potential environmental liabilities involving the company. The Business Section describes the company=s principal business, its products/services, principal markets and competitors, and how many people the company employs. Part II - Financial Matters includes a three year financial statement, information about the stock and who holds 5 percent or more. Part IV contains a list of company officers and directors, including biographical information on the officers.

Proxy Statement B Form DEF 14A: Mailed to each shareholder before the company=s annual meeting. Provides valuable information such as: who owns 5 percent or more of the company; who sits on the board of directors and how much stock they own; and how much compensation is to top five officers of the company paid.

8K: Reports on special events such as a merger, or the firing of the CEO, or the launch of a government investigation of the company. These are called Amaterial events@ which could affect the stock of the company. Whey they occur, companies are required to file an 8K with the SEC.

10Q: Filed by the company every three months. These quarterly reports include sales and profit information, a brief narrative on acquisitions, corporate officer changes and other business matters

for the three month period.

Environment

EPA Superfund Sites www.epa.gov/superfund/sites/

Superfund sites are those sites that are deemed to be the worst environmentally and are targeted for clean up. A search engine at this EPA site lets you search by company name and will list all contaminated superfund sites caused by that company.

Toxic Release Inventory Explorer: www.epa.gov/tri/

By law, certain U.S. manufacturing facilities must file annual reports to the EPA on releases into the environment of listed toxic chemicals. EPA computerizes this information into a Toxic Release Inventory or TRI, and makes it available to the public. This site allows you to find how much pollutants companies discharge into the environment. You can also obtain company TRI data at EPA=s Envirofacts www.epa.gov/enviro, which is a one-stop library for EPA=s environmental data. More user friendly TRI data can be accessed at:

RTK-Net www.rtk.net

The Right-to-Know Network provides access to TRI and numerous other environmental databases. To access the TRI database, click onto the ADatabases@ option. From there, you can search all environmental databases using the AMaster Search@ or you can search the TRI database through the AToxics Release Inventory@ option. You can search using the parent company name.

Environmental Scorecard www.scorecard.org/env-releases/

From the Environmental Defense Fund. Using EPA databases, the Scorecard lets you search by company name for the pollutants released by each company plant.

(Labor & Consumer Protection) X14

U.S. Occupational Safety and Health Administration (OSHA) www.osha.gov/oshstats/

Lets you search by name of company for workplace safety inspection reports and violations.

U.S. National Labor Relations Board (NLRB) www.nlrb.gov

Use this site to determine if the company has become involved in any recent disputes with its unions where the NLRB was called in to mediate.

U.S. Federal Trade Commission (FTC) www.ftc.gov/search

The FTC enforces a variety of U.S. antitrust and consumer protection laws. Search ACommission Actions@ to see if the FTC has ever taken action against a company.

Activist Web Sites

Public Information Network www.endgame.org

Provides profiles of bigger companies including their environmental offenses.

Multinational Monitor www.essential.org/monitor

Reports on abuses of corporations. You can search back issues by company name.

AFL-CIO Executive Pay Watch www.paywatch.org

Find out how much big U.S. companies pay their CEOs.

Environmental Background Information Center www.ebic.org

You can download profiles of big U.S. waste companies.

Greenpeace www.greenpeace.org

Project Underground www.moles.org

Information on mining companies.

Responsible Shopper www.responsibleshopper.org

Snapshots of bigger companies. Information on companies=record on the environment, labor and consumer protection.

Work on Waste www.workonwaste.org

Back issues of Paul Connett=s anti-incinerator newsletter WASTE NOT are on this site. Let=s you search back issues by company name to find out about incinerator projects in the U.S..

Center for Health Environment & Justice (CHEJ) www.chej.org

CHEJ has extensive and inexpensive information packets on sewage sludge, incinerator ash, cement kilns, and profiles of some individual U.S. waste companies.

Environmental Research Foundation www.rachel.org

ERF publishes the environmental newsletter RACHEL=S ENVIRONMENT & HEALTH WEEKLY. You can keyword search back issues for information about landfills, incineration and toxics.

Business Directories

These web sites are generally targeted for business use, but they can yield some good information.

Hoover=s Online www.hoovers.com

Profile capsules of bigger companies.

Business Wire www.businesswire.com and PR Newswire www.prnewswire.com

Company generated press releases on mergers, joint ventures and new projects.

Forbes 500 Top Private Companies http://www.forbes.com/private500/

Thomas Register of American Manufacturers www.thomasregister.com

Let=s you search by company name, brand name or product or service. Gives company address, phone number and description of products.

Companies Online www.companiesonline.com

Includes company name, mailing address, CEO=s name, annual sales, number of employees and web site.

Corporate Information www.corporateinformation.com

Organized by country, it offers company profiles and extensive links to corporate directories and other useful sites.

Kompass www.kompass.com

Good way to locate non-U.S. companies. Provides address of company. Must subscribe for revenue and additional information.

Search Engines

Always do the same search using different search engine tools because each one uses a different retrieval criteria. Most will let you search phrases, but you generally have to put the phrase in quotations or use + or B signs between each word. Here are some good ones:

Alta Vista www.altavista.com

Google www.google.com

Northern Light www.northernlight.com

Puts your search results into folders which lets you cull through a large number of search hits. It has archived newspapers for which they sometimes charge a small fee.

Dogpile www.dogpile.com

Excite www.excite.com

If you search for a company, it automatically puts that company=s web site at the top of your list.

People Finders

AnyWho www.anywho.com

Yahoo People Search http://people.yahoo.com

Switchboard www.switchboard.com

Journalist Sites

Reporter=s Desktop www.reporter.org/desktop

Links to useful tracking tools and journalism resources.

Deadline Online www.deadline.com

Links to hundreds of news resources.

Electronic Library www.elibrary.com

Archives a large number of journals and newspapers. Fee based, but first 30 days are free.

Chemical Hazard Information

Chemfinder: http://chemfinder.camsoft.com

U.S. EPA Chemical Fact Sheets: www.epa.gov/docs/chemfact/

EDF=s Scorecard Chemical Profiles: www.scorecard.org/chemical-profiles/

ChemID: http://chem.sis.nlm.nih.gov/chemidplus/

Agency for Toxic Substances and Disease Registry (ASTR): www.atsdr.cdc.gov

HAZDAT: http://www.atsdr.cdc.gov/hazdat.html

ToxFAQs: http://www.atsdr.cdc.gov/toxfaq.html

Environmental Medicine: www.atsdr.cdc.gov/HEC/csem.html

EXTOXNET: http://ace.ace.orst.edu/info/extoxnet/ghindex.html

National Toxicology Program: http://ntp-server.niehs.nih.gov

Chemical Injury Information Network: www.ciin.org

Right-to-Know Hazardous Substance Fact Sheets: www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm

Material Data Safety Sheets: http://msds.pdc.cornell.edu/msdssrch.asp

Safety Powerpoint Library: http://siri.uvm.edu/ftp/ppt/powerpt.html

Pesticides

Pesticide Action Network International www.pan-international.org

Northwest Coalition for Alternatives to Pesticides (NCAP) www.pesticide.org

U.S. EPA Office of Pesticides Programs www.epa.gov/pesticides

California Department of Pesticide Regulation www.cdpr.ca.gov/dprdatabase.htm

Waste Journals Online

Waste Not www.workonwaste.org

Back issues of Paul & Ellen Connett=s anti-incineration newsletter.

Waste Age www.wasteage.com

Trade journal covering news of waste disposal.

Waste News www.wastenews.com

Rachel=s Environment & Health Weekly www.rachel.org

Reports on toxic issues, including incineration and landfills. You can keyword search back issues.

Solid Waste.com www.solidwaste.com

Latest news concerning solid waste industry.

Other Useful Sites

Health Care Without Harm www.noharm.org

CQS Health and Environment www.cqs.com

Greenpeace Toxics Campaign www.greenpeace.org/~toxics

Institute for Local Self Reliance www.ilsr.org

Waste to Wealth section has lots of information on recycling and reuse.

Lowell Center for Sustainable Production www.uml.edu/centers/lcsp

Information on clean production.

Internet Resources on Waste and Chemicals www.most.org.pl/otzo/en/web-p2w.html

Environmental Projection Agencies Around the World www.worldbank.org/nipr/epas.htm

List Serves

Email list serves are a good way to get news, learn from others and post queries. Most list serves have an archive where you can search old messages. Here are a few good list serves that focus on toxics.

Ban Toxics

To subscribe contact Jon at jon@cqs.com

Right-To-Know Watch

News and discussion on community right-to-know and public disclosure of environmental information. To subscribe, send an email to rtk-watch-subscribe@topica.com In the message part write only: Subscribe.

Recycle

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